# AIRLINE PASSENGER BAGGAGE SCREENING: TECHNOLOGY AND AIRPORT DEPLOYMENT UPDATE

**(109–86)**

# HEARING

BEFORE THE

SUBCOMMITTEE ON
AVIATION

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

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# AIRLINE PASSENGER BAGGAGE SCREENING: TECHNOLOGY AND AIRPORT DEPLOYMENT UPDATE

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**Thursday, June 29, 2006**

HOUSE OF REPRESENTATIVES, COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, WASHINGTON, D.C.

The committee met, pursuant to call, at 10:00 a.m., in room 2167, Rayburn House Office Building, the Hon. John L. Mica [chairman of the committee] presiding.

Mr. MICA. Good morning. I would like to call this hearing of the House Aviation Subcommittee to order. We have two panels, a rather full schedule this morning.

The order of business will be opening statements by members and then we will turn to our first panel. With that, I would like to welcome everyone. The topic of today's hearing is airline passenger baggage screening, and we are going to look at technology and airport deployment and its current schedule, get an update.

This morning's hearing, as I said, will focus on the Transportation Security Administration, TSA's process, for certifying, testing and deploying and funding integrated in-line explosive detection systems for screening checked baggage. It has been just under two years since this Subcommittee last considered this issue, and some four and a half years since Congress passed the Aviation and Transportation Security Act, which we helped author and establish the TSA.

The Act set some very tight deadlines for screening 100 percent of the checked baggage for explosives. The TSA's first step was to waste, unfortunately, $1 billion to contract for airport EDS installation designs, and unfortunately, most of those designs and plans still sit on shelves, and many of those plans will never be used. One of the things I intend to do as a result of this hearing is ask the Inspector General in GAO to investigate and review this contract and what took place, what went wrong.

Now, some of all of this was done in a rush to meet Congressionally-mandated deadlines. And in that rush, TSA unfortunately created a hodgepodge of systems and we now have in place explosive trace detection equipment at some airports, and we have standalone EDS machines at others, and various combinations. Even more unfortunately, the vast majority of airports in the Country are still in a state of disarray today. We still have crowded airport lobbies, some of them packed with the variety of equipment and procedures that I just mentioned. We have inconvenienced pas-

sengers and we have enormous headaches for airport operators and also for airlines.

This patchwork system has also resulted in a small array of personnel costs with more baggage screeners, I think we are up to 16,800 just behind the scenes screening baggage out of a work force, a small army of 45,000. We have increased on the job injury rates, and huge worker compensation costs. As I said, we are looking at somewhere about 16,800 employees by TSA behind the scenes, and unfortunately, we have seen in addition to the workers comp rates, we have seen vacancy rates on average of 24 percent.

The Occupational Safety and Health Administration, OSHA, has projected that more than 16 percent of TSA employees will report a job related injury or illness by the end of fiscal year 2006. That happens to be, as we understand it, the highest percentage in the Federal Government. For 2007, the TSA has requested $20 million in back payments to reimburse the Department of Labor for prior workers compensation claims filed in just 2005. The 2007 budget request also includes $55 million for workers compensation. That is a 40 percent increase from the 2006 request.

Unfortunately, that picture is pretty grim, and it is also pretty costly. The situation has even impacted the Nation's Federal security directors, they have become completely overwhelmed by personnel matters.

Quite frankly, the TSA's current baggage screening system continues to show no ability to adapt or keep pace with the ever-changing demands of the aviation industry. That is where today we come into the picture, trying to keep the planes and passengers moving on time and their baggage with them.

At the same time that that patchwork system is getting bogged down by its own efficiencies, there is in fact growing evidence that it does not even afford us more effective security screening. The whole purpose for this multi-billion dollar effort and huge army of personnel is again good screening. And unfortunately, that isn't the case.

Testing by TSA and the Department of Homeland Security has repeatedly demonstrated the advantage of fully integrated in-line checked baggage EDS systems, especially at large airports. In-line EDS systems have also proven to be highly efficient, extremely cost-effective and more accurate, again, at the primary purpose for all of this, the detection of dangerous items.

They also have a lower maintenance cost, require fewer screeners and have less out of time service. TSA has estimated that at the nine airports that received letters of intent, LOIs, the TSA will recover its initial investment in just over a year and will save $1.26 billion over seven years. These are some incredible figures.

The GAO has reported that in-line EDS systems at nine LOI airports they looked at would reduce the number of TSA personnel, screeners and supervisors, by an astounding 78 percent. That could mean a reduction in as many as 13,000 TSA baggage screeners, saving millions, in fact billions of dollars.

Yet despite the mounting evidence in the two years since this Subcommittee last held a hearing on this topic, the TSA reports that only an additional 15 airports, for a total of 23 airports out of 441 commercial airports, have converted to full in-line EDS sys-

tems. That sounds like a bad picture, but you have to remember that there are 29 airports in this Country that handle 75 percent of all passengers. Only nine have full in-line EDS systems. Of those nine airports, eight funded the EDS projects on their own. That is eight of the nine, funded them on their own, and received letters of intent to be reimbursed by the TSA over a three to five year period. That is an absolutely dismal record for the Federal Government.

I am extremely disappointed with Congress, and I have to take a lot of the responsibility in this, and also with the TSA for their lack of progress in this program. We must examine the reasons for delay. First, of course, funding remains an issue, and through fiscal year 2006, Congress has appropriated a total of $3.851 billion for EDS purchase and installation. Of those funds, however, no more than half a billion of those dollars were used by TSA on the short-term challenges associated with meeting the 100 percent baggage screening deadline.

Just an aside, this is one reason why I tried to get that deadline extended, and some people imposed the deadline. When we first debated this, we knew exactly what would happen as we put a hodgepodge system in place at great expense, using a huge army of personnel. And that is exactly what we have gotten, and very few automated, good performing systems.

In fiscal year 2007, the TSA requested $435 million for EDS purchase and installation. However, TSA plans to use only $156 million for EDS installations at the remaining 432 non-LOI airports. Yet based on the strategic planning framework for the electronic baggage screening program provided to Congress by TSA in February 2006, between $4 billion to $6 billion will be needed to achieve the optimal EDS systems. We have right now a 2019 schedule.

The top 25 airports requiring EDS installation will cost approximately $1.4 billion. Furthermore, according to the strategic plan deployment model, approximately 200 airports still require some form of in-line system. As a result of the lack of funding for installation of in-line EDS systems, airports are using a variety of funding mechanisms, alone sometimes and also in combination, to pay for in-line system installation. They use airport improvement funds, AIP money, other transactional agreements, OTAs, and with the TSA, sometimes with their own revenue and sometimes using passenger facility charges, or PFCs.

This funding dilemma has further complicated the already hodgepodge EDS system TSA has put in place. I have said it before, and I am sure I will say it again, but TSA and OMB must think outside the box and use modern financing tools available to the Federal Government to leverage scarce dollars.

But the lack of progress is also attributable to the amount of time it takes for TSA to certify, test, to conduct a pilot or demonstration project and also to deploy some of these systems. Despite the fact that a number of manufacturers are developing alternative technologies to complement the existing EDS systems, and they are also experimenting with different system configurations, progress in testing and deploying the innovations is frustrating and any real progress made in research and development also lags be-

hind. We are going to hear, I have hauled in the folks where there was a Reveal demo today, and we are going to hear a great example of a disaster in that corridor.

For instance, in September 2004, as part of Phase I of the Manhattan II project, TSA awarded ten cooperative agreements totaling approximately $5.2 million for the development of new technologies. Phase I ended in December of 2005, yet after six months, TSA has not provided any funding for Phase II.

Our research and development also to complete this certification process, unfortunately is just as tedious. I am told that TSA technology certification process can take up to nine months to complete. TSA also seems to get bogged down in piloting and demoing technology, but then fails to develop and issue minimum technology standards that can be utilized by the security and aviation industries. TSA's oversight and follow-through on some of their pilot programs has been absolutely disappointing.

Today, as I said, we are going to hear about the disastrous Reveal pilot program at Newark Liberty International Airport. My goal in this is to review and analyze what went wrong at Newark. I hope that this will provide a template for future TSA pilot programs to not repeat the same mistakes.

The bottom line is, our Nation's aviation security system must become smarter and more efficient. We absolutely must make better use of limited resources and come up with a more efficient and speedy process for testing and certifying and deploying new security technologies. Continuing to follow the slow, jumbled and disconnected path taken by TSA in the last four and a half years is no longer acceptable. It is providing a real drain on the system and to the aviation industry. A patchwork approach will inevitably lead to weaknesses in the system and possibly even disaster.

Long comments, but background necessary for this Subcommittee and this hearing. I am pleased to yield at this time to the Ranking Member.

Mr. COSTELLO. Mr. Chairman, thank you. And I thank you for calling this hearing today.

I do have a lengthy statement that I will submit for the record. We have two panels of witnesses here and I look froward to hearing from them. There are a number of problems associated with the deployment of the various systems at our airports. Part of, I think the blame can be shared by TSA, part of it can be shared by the Administration, part of it can be shared by the Congress. Because we often times talk about security priorities, but do not follow up with the appropriation in order to purchase the equipment that is needed and the personnel in order to carry out the job.

But with that, I will submit my statement for the record and yield at this time the balance of my time for an opening statement to Mr. Pascrell.

Mr. PASCRELL. Thank you, Mr. Chairman, Mr. Ranking Member.

I appreciate your decision to hold a hearing on the status of the explosive detection systems for baggage at our Nation's airports. This issue has been of great concern, as you know, at Newark Liberty International Airport in New Jersey. The initial deployment EDS machines are set up throughout lobbies and other common areas in three terminals at Newark Airport. This has created,

charitably, an awkward system. It hurts efficiency at the airport, the safety of the travelers in the lobbies. It is not the best way to go about screening baggage.

However, Newark Airport has made the best of these initial circumstances. Given the limited physical capacity for expansion, the airport has worked to improve the baggage screening system with the best technology available. It is generally agreed that in-line EDS machines are the gold standard for screening. However, to retrofit many of the Nation's older airports costs in the neighborhood of between $100 million and $200 million apiece. In fact, installation of an integrated, in-line EDS would require extensive terminal modifications. Some do not have the physical capacity nor the infrastructure to support the changes.

So far, the Federal Government has not provided appropriate resources to facilitate in-line system implementation. It would seem that this is against our own self-interest. According to the GAO, if TSA were to fund in-line EDS systems at the nine airports with which it has letters of intent agreements, the Federal Government would recover its initial investment in just over one year and save over $1.26 billion every seven years. The GAO has stated that very clearly.

This is an investor's dream. But with $4 billion to $6 billion in needs remaining, $435 million a year will not cut it. You can't do it. So we are only kidding ourselves. Why? We have not made this a priority. Why? There are other priorities. Why? It is important that Barry Bonds gets a $72,000 tax cut, and you know what I am talking about.

You may shrug all you want, that is a fact of life. When everything is a priority, nothing is a priority. If this is going to be a priority, if we want to protect the customers, then we have to invest the money.

Clearly, there is room for improvement. I am positive that this Committee will continue to be a strong advocate of providing our airports with the resources they need. I hope the appropriate officials here today are listening.

However, many airports have made the decision to move ahead on their own, to better the inefficient and precarious hodgepodge system created by the original placement of the EDS machines. In Newark, the airport has gone about purchasing and installing 23 new EDS machines to form a system integrated with the checked baggage system. Last year, as part of this upgrade, Newark participated in a TSA pilot program using the new technology. In the end, this program was not successful. The reasons remain unclear.

I look forward to a vigorous discussion with our panel members about the unfortunate outcome of this program. This is particularly frustrating, Mr. Chairman, and I thank the Ranking Member for yielding.

Mr. MICA. Thank you. And I hope you stay, Mr. Pascrell, to hear about the whole Newark fiasco. Because it is not always how much money we spend, it is how we spend it. Newark was to be our premier demonstration of new technology. That is one reason why I asked them all to come here, because I have heard five or six different stories. And we are going to hear the whole truth and nothing but the truth today.

Mr. Ehlers.

Mr. EHLERS. Thank you. I will try to speak the truth and nothing but the truth.

Thank you for having this hearing. It is a very important issue. And putting it in the broader context, I think we have done rather well overall across this Nation in dealing with aviation security. That doesn't mean it is good. It is just that we have so many good targets in this Nation, because we live in a free and open society, that we are never going to be able to reduce all the threats. We can just try to handle them as best we can and try to prioritize. I appreciate the work that has been done by all Government agencies trying to do that.

I am continually impressed, since I fly at least four flight segments a week, at how many, and I tend to have a devious mind, I might add, a devious scientific mind. I am continually surprised at how many weaknesses I identify in the system and how easily I could devise ways to bypass the system and get contraband material on board. I will not share that with you or with anyone else. It is bad enough having a devious mind without sharing it.

But it just illustrates the extent of the problem. We cannot make aviation perfectly safe. We cannot make our ports perfectly safe. But what we can do is make it difficult for anyone to do wrong. And that is what I think we are beginning to do effectively. We have a long way to go on the ports. We have a good start in aviation.

But having said that, then we get down to the Chairman's concerns and my concerns as well. Are we doing it effectively, are we doing it cost-effectively? And that is something where I think we have fallen down in many areas. So I look forward with interest to the testimony today.

With that I yield back.

Mr. MICA. I thank the gentleman.

Mr. Honda.

Mr. HONDA. Thank you, Mr. Chairman and Ranking Member Costello, for scheduling this hearing, which is of enormous importance to Mineta San Jose International Airport and airports all across this Country. It is good to see you, Dr. Null. I just want to let you know parenthetically that TSA leadership at the airport is great.

Properly securing our Nation's airports is wrought with challenges that can only be addressed with adequate funding, innovative thinking and a strong Federal and local partnership. Following the terrorist attacks of September 11th, I convened a blue ribbon task force on aviation security and technology, comprised of aviation experts and also Silicon Valley executives. This task force called together the brightest minds of Silicon Valley, the heart of our technology revolution, to brainstorm about the future of aviation security.

In 2002, the task force issued a final report. Some of the recommendations in the report were taken up by TSA as pilot programs, including the use of GPS to track vehicles on the tarmac. Other recommendations unfortunately have not been pursued for reasons that I can't understand at this time.

The task force placed great importance on providing strong security in a traveler-friendly manner. I am concerned that TSA, for financial or other management reasons, has not taken the same approach. Dr. Null is very familiar with San Jose Airport, and the great strides the airport has made to improve the baggage screening process. That task has not been easy at at least one of the airport's terminals, which was constructed to address the capacity concerns of pre–9/11.

The airport and the city of San Jose have undertaken the task of dramatically renovating and expanding the airport. They have added an international arrival terminal and are in the process of improving existing terminals. San Jose's airport's efforts have managed to keep the security process out of the terminal lobbies, resulting in a more efficient flow of the pedestrian traffic.

One of the airport's top priorities will be secure Federal support for an on-line screening system to improve their efficiency and eliminate double handling of baggage. I understand that San Jose is one of the top 24 airports in the Country being considered for fiscal year 2007 funding to construct their system. I hope that TSA will continue to work cooperative with San Jose airport as they move forward into the construction phase of the new EDS system.

I thank you, Mr. Chairman, for this opportunity, and I yield back.

Mr. MICA. Thank you. Are there any other opening statements?

OK. This morning I am going to swear in our witnesses. Would you stand, please, raise your right hand.

[Witnesses sworn.]

Mr. MICA. Let's for the record indicate that all the witnesses answered in the affirmative.

We take this matter pretty seriously. We don't have the representative of Continental Airlines here. We do have a written statement by Hershel Kamen. I ask unanimous consent that that entire statement be entered into the record by Mr. Costello. Without objection, so ordered.

And we will also call that witness in, swear that witness under oath and question that witness about, again, one of the pending oversight issues that we are going to address.

With that, we have our first two witnesses. One is Mr. Randy Null, he is the Assistant Administrator for Operational Process and Technology of TSA. And then we have Ms. Cathleen A. Berrick, she is the Director of Homeland Security and Justice Issues at the U.S. Government Accountability Office.

We will hear first from Randy Null, with TSA. Welcome, and you are recognized.

**TESTIMONY OF RANDY NULL, ASSISTANT ADMINISTRATOR FOR OPERATIONAL PROCESS AND TECHNOLOGY, TRANSPORTATION SECURITY ADMINISTRATION; CATHLEEN A. BERRICK, DIRECTOR, HOMELAND SECURITY AND JUSTICE ISSUES, GOVERNMENT ACCOUNTABILITY OFFICE; MICHAEL ELLENBOGEN, CHIEF EXECUTIVE OFFICER, REVEAL IMAGING TECHNOLOGIES, INC.; WILLIAM W. BRITZ, PROJECT MANAGER, AVIATION SECURITY SYSTEMS, RAYTHEON TECHNICAL SERVICES COMPANY, LLC; SUSAN M. BAER, GENERAL MANAGER, NEWARK LIBERTY INTERNATIONAL AIRPORT**

Mr. NULL. Good morning, Mr. Chairman, Congressman Costello and distinguished members of the Subcommittee. I am pleased to have the opportunity to appear before you today on behalf of the Transportation Security Administration, to provide you with an update on our electronic baggage screening program.

Since the initial deployment of TSA's checked baggage screening technologies, we have pushed hard for innovation and investment intended to dramatically improve the system. Today, 51 airports are either operational or deploying some form of advanced in-line baggage screening systems. Additionally, TSA has certified two new explosive detection systems and is testing others that if certified, will provide additional capabilities.

We continue to search for answers outside the box and ways to better utilize existing technology and work in partnership with airports and airlines to address pressing needs, take advantage of special opportunities and develop innovative, cost-effective solutions appropriate for unique operating circumstances. We have learned valuable lessons in the last three years about the operational nature of advanced in-line explosive screening and adapted. Research into both short-term and long-term technological solutions continues. Several vendors are developing equipment upgrades to increase the life span and efficiency of our current equipment.

Our long-term development strategy places an emphasis on developing EDS technologies that can process greater than 900 bags per hour and employ revolutionary threat detection concepts to lower false alarm rates. Laboratory results thus far indicate that those are indeed achievable goals.

TSA continues to take action on several fronts to ensure that optimal sufficient screening solutions are provided to airports. Through eight letters of intent, we have collaborated closely with stakeholders at nine airports to develop, design and install advanced in-line baggage screening systems. Our funding commitment to the nine LOI airports runs through the end of fiscal year 2007, completing a Federal investment of almost $1 billion for facility modifications.

Furthermore, we have developed and relocated equipment to increase screening capacity, reduce worker injuries and increase screening efficiency. Finally, when airport operators or tenants are able to fund a significant portion of the expense necessary to build an in-line system, either during new construction or renovation, TSA has offered financial assistance through the use of other transactional agreements for smaller projects. Under these efforts, the 51 airports are either operational or are deploying some type of in-

line baggage screening system throughout an entire airport or on a terminal basis.

In February of 2006, we delivered to the Congress a strategic planning framework for the checked baggage screening program that has already begun to influence our investment and deployment decisions. This framework details TSA's long-term planning philosophy for the development and implementation of optimal baggage screening solutions at the Nation's top 250 airports. The goals of the plan are straightforward: reduce total life cycle costs by deploying optimized and customized screening solutions; expand the amount of baggage screened by EDS technology; develop and publish planning and design guidelines for in-line systems, incorporating lessons learned; accelerate and leverage next generation technology matched to those best practice designs; and work actively with stakeholders to collaboratively manage and oversee the design of optimally scaled screening systems.

Under this framework, TSA has prioritized airports based upon projected passenger growth and estimates of peak capacity needs. Using these estimates, we can make a general determination of the optimal screening solution for each airport, taking into account reasonable assumptions of development in EDS technologies. These estimates have largely been completed, although they must continually be updated to reflect current operational conditions.

Use of these estimates is beginning to provide flexibility to deploy optimized solutions to airports based upon priority, with the understanding that changes in operational conditions, as well as increased stakeholder participation at a particular airport may alter that listing.

A large component of the strategic plan is a specialized study on alternative financing solutions. This cost sharing and investment study required by the Intelligence Reform and Terrorism Prevention Act of 2004, and developed in coordination with aviation industry stakeholders, will be completed in the summer of 2006.

As you are aware, authorization of the Aviation Security Capital Fund created by Vision 100, Century of Aviation Reauthorization Act, expires in fiscal year 2007. The funds provided that the first $250 million collected in passenger security fees is used to fund airport security improvement projects, to include checked baggage screening projects. We support a three year extension of the fund through fiscal year 2010, with the proviso that the allocation requirements contained in the fund and which are not specifically tied to aviation security needs are eliminated.

Finally, as you are aware, the 100 days between Memorial Day and Labor Day represents the busiest time at airports across the Country. TSA expects to screen more than 200 million passengers and their bags during this time. In light of this increase in passenger flow, TSA has taken aggressive actions to manage airport conditions this summer by increasing our staffing through local hiring initiatives, deploying members of our national screener force to support airports with passenger volume challenges and reconfiguring screening lanes at some airports to speed passenger floor.

Peak wait times have remained consistent with the average peak wait times between 15 and 20 minutes and only sporadic instances of wait times over 30 minutes. TSA is fully prepared for the sum-

mer travel season, and we are working with our industry partners to ensure that the people have a positive travel experience.

Thank you for the opportunity to testify today, and I will be pleased to respond to any questions.

Mr. MICA. We will hold questions and we will hear next from Cathleen Berrick. She is with the Government Accountability Office. Welcome, and you are recognized.

Ms. BERRICK. Thank you, Mr. Chairman, Congressman Costello, and members of the Subcommittee, for inviting GAO to discuss TSA's progress in planning for and deploying optimal checked baggage screening solutions at U.S. airports, including in-line baggage screening systems.

The benefits of in-line systems are widely known and include a significant reduction in transportation security officers, or screeners, needed to operate screening equipment, increased baggage throughput, increased security and reductions in on the job injuries. In-line systems can also reduce the need for TSA to use alternative screening procedures, which involve security trade-offs and are sometimes used when large volumes of bags or passenger crowds create security vulnerabilities.

With the issuance of its strategic planning framework in February of this year, TSA has begun to systematically plan for the optimal deployment of checked baggage screening systems, as we previously recommended. In this framework, TSA identified the optimal screening solution for 250 airports with the highest checked baggage volume. These screening solutions vary by airport and range from fully automated, high speed in-line systems to standalone EDS and ETD equipment.

TSA also prioritized the top 25 airports that should first receive Federal funding for in-line systems. TSA reported that if these airports do not receive in-line systems, they will require additional screening equipment to be placed in airport lobbies and additional screeners in order to continue to electronically screen 100 percent of checked baggage.

Regarding potential savings from the installation of in-line systems, we reported in March 2005 that TSA estimated it could save about $1.3 billion over seven years for nine airports that were constructing in-line systems. Since that time, TSA has determined that many of the initial in-line systems have not produced level screener savings sufficient to offset the up-front capital cost of constructing the systems. TSA believes that the keys to reducing future costs are establishing best practice design guidelines for in-line systems and using newer EDS technology, both of which should be available in the near-term.

Currently, TSA estimates that it can achieve a savings of about $4.7 billion over 20 years for the 250 airports reviewed by installing optimal screening solutions, to include in-line systems. TSA further estimates that it will cost $22.4 billion to install these solutions over this time frame. As you know, despite the benefits of in-line systems, resources have not been made available to fund these systems on a large-scale basis. TSA reported that under current investment levels, installation of the optimal screening solutions at airports will not be completed until the year 2024.

TSA further reported that unless investment is accelerated, a substantial funding requirement for replacing old EDS machines will compete with funding needs for new in-line systems in about eight to nine years. TSA is currently collaborating with airport operators, airlines and other key stakeholders, to identify funding and cost-sharing strategies for the installation of in-line systems. They expect to complete this effort by the fall of 2006.

Some of the financing options being considered include equipment leasing, sharing and savings from in-line systems with airports, enhancing the eligibility of passenger facility charges and tax credit bonds. Due to the substantial efficiency and security benefits that can be achieved, and the demands expected to be placed on existing screening systems due to protected airline traffic growth, continuing partnerships between TSA and airport stakeholders will be critical for the ultimate deployment of optimal screening solutions.

Mr. Chairman, this concludes my opening statement, and I will be happy to respond to any questions.

Mr. MICA. OK. Here is what we are going to do. I have these three other panelists with the Newark situation. We have heard from TSA, and you have given us an update on what you are doing, and GAO has reviewed what they are doing.

Part of the reason for this hearing was what we uncovered as the disaster with our demonstration project, our pilot project at Newark. We have been buying this equipment, which is pretty expensive, L–3 or InVision equipment, at almost a million dollars a copy. It is the size of a Volkswagen. Most of the members of the panel have seen it. And it is expensive to integrate it into these in-line systems, and Congress has balked at funding it.

So for several years we have tried to encourage certification, getting other competitors into bringing it into competition and lowering the cost. One company was Reveal, that spent at least a year, I guess, getting certified, maybe longer, through the certification process. Finally that was done a couple of years ago. They got their certification.

We wanted to deploy it, because it was about a quarter of the size, a quarter of the cost. A decision was made to acquire that.

Some of the airline industry and some of the large airports said this was a solution, and it was important that we try installing it at large airports, maybe a medium size airport in a smaller, independent use of the equipment, standalone use of the equipment. One of the great hopes was to try it at Newark Airport, which is one of our highest traffic areas. We were encouraged by Continental and others that this would be a solution.

The gentleman, we have one gentleman from Reveal, Michael Ellenbogen, and then we have Mr. William Britz, with Raytheon. Now, Reveal provided the equipment, Raytheon was hired by TSA to do the installation of the system. And then we have Susan Baer, with the airport. And the airport agreed to participate in this project.

Now, why this is so important is again, because this was going to be the hope of putting this less costly equipment in place. I found out by accident that something had gone awry a few months ago, went up and looked at it, had staff go up and look at it. Can

we put a slide up and show, this is what the vendor proposed. If you see the counters, I guess the counters would be at the very bottom. The idea here would be to have very little lifting from the counter where the bag is checked in, be put on a conveyor, and then the three white slashes there are the Reveal machines. You see one Reveal machine in a horizontal position.

So the agent would merely take it, it would get set by the passenger, actually down there, it would go on a conveyor belt, and then the black lines are additional conveyor belts. This is a less costly configuration than going in and gutting the insides of the airport, putting these million dollar copies in there. This may seem like a small point to some folks, but this is very important, that we see how this works in larger airports, again, looking at less cost. So this is what the vendor, I am told, recommended, the installation.

Can you go to the next slide? This is what we ended up at. This isn't a good slide, because it doesn't show, if you see these two sort of, they look like little torches here, are the conveyor belts, and actually, the counters are out in front. So the conveyor belts don't connect with the counters, and you have another piece of equipment off to the left. There was originally supposed to be five Reveal pieces of equipment. We ended up with three.

What you don't see off to the right is they ended up putting two InVision 5500's, the big equipment, off to the right in the configuration. Those are almost million dollar copies. So this is nothing like the Reveal, the producer of the equipment envisioned, nothing like Congress envisioned. It is an absolute disaster, in my opinion, because we have no airport now with high volume showing how this could possibly work.

It took about nine months to a year to get this in place. We will hear exactly that period of time. And whatever money was spent. So we have got the equipment certified, we spent this time on a demo project that doesn't demonstrate anything. And I got different answers from different people. That is why I have asked these folks to come in today.

Finally, just show the configuration. This is the way it is in the lobby. Again, it makes me absolutely flip out when I see it, because you see you actually have to lift up the bags and put them into the machine. None of the equipment is put together, connected together, integrated. There is no integration whatsoever. And there was supposed to be one spot for resolution in the original. That would be where the machines are connected and networked together, and one spot for resolution where you would have one or two people reading.

Instead, this requires one person to lift the bag and another one to do resolution independent. I mean, again, I just completely lost it when I saw this. This is just an unbelievable waste of time and money. It is an incredible setback for us, nationally. This is an incredible setback for us nationally, because we have no demonstration of this technology and we are three years into the thing. It just drives me out of my gourd.

So I sent staff up there, I have been up there, when I heard about it. And we have had Homeland Security staff up there.

So this today is to figure out what went wrong, pardon my phraseology. But you can tell, this is one of the biggest frustrations, biggest fiascos I have ever seen. We need to find out what went wrong.

So that lays the groundwork for the members on the panel, sorry for taking this time, but I had to get everybody to understand the importance of this, and then the mess that you see at Newark International Airport. Did you want to comment at all? Then I am going to hear from these three witnesses and we will get Continental's folks later.

Mr. COSTELLO. Mr. Chairman, I would agree that it is a mess. But I think there are reasons why that it is, and I——

Mr. MICA. We want to hear that.

Mr. COSTELLO.—have questions for our witnesses, not only I think is there blame again to be shared by TSA, but I think by Raytheon and by Reveal as well. I question really if this equipment was the appropriate equipment to be placed at this facility, at this airport. There are those who say that it probably will not work at hub airports, but at mid-size airports is probably where it is best, the CT–80 machines are best used.

And there is also some question about TSA may have in the contractual agreement that was executed by Reveal, maybe the expectations were set too high. Because we will hear from hopefully the people at Reveal what they advertised the capacity of the CT–80, how many bags per hour that they can throughput. I understand the web site says that they can throughput somewhere around 100 bags per hour, where the contract required them to do 120 bags per hour. There is a question, too, if the location at the airport, if there was enough space physically to put five of these machines, physically in the space that was designated.

So there are a number of questions, and there is a lot of—I don't want members who may have to leave early to think, well, it is just TSA's fault or it is Raytheon's fault or it is Reveal's fault. It seems to me that there is enough blame to go around. And we will get into that when we get into questions.

Mr. MICA. Thank you for those excellent comments. Again, with that introduction, I want to hear from Michael Ellenbogen, President and CEO from Reveal. You have heard some of the questions raised here, all three witnesses. So we will hear from you first and then we will go to the other witnesses. Thank you.

Mr. ELLENBOGEN. Mr. Chairman, you are not an easy act to follow, sir.

Members of the Committee, thank you very much for inviting me to testify today. My name is Michael Ellenbogen, I am the founder and President of Reveal Imaging Technologies.

Reveal is a three and a half year old, privately financed company. We designed the CT–80 to offer flexible options for checked baggage screening. TSA funded much of the CT–80 development and certified the system in December of 2004.

TSA's certification is focused on detection and false alarm rates. Newly developed systems, upgrades, features, et cetera, are then tested by the TSA through their pilot program. The goal of the 30 day pilot program was to verify the CT–80's operational performance, reliability, real world throughput and false alarm rates, as I

understand it. TSA identified three different airports—Newark, JFK, and Gulfport, Biloxi, Mississippi—to test the CT–80's operational characteristics after it was certified.

Eight systems were installed and tested last summer. And these pilots were successful in demonstrating that the CT–80 is able to operate reliably in both low and high throughput environments. The successful pilot resulted in a procurement contract and an order for 73 of the CT–80 systems.

Mr. Chairman, the CT–80 offers a variety of flexible installation options for checked baggage screening at airports of different sizes. We are actively working with TSA to demonstrate and deploy the most cost-effective solutions possible, and I look forward to answering any questions you might have. Thank you.

Mr. MICA. Thank you. We will hear now from Mr. Britz.

Mr. BRITZ. Thank you, Mr. Chairman and members of the Subcommittee. My name is Bill Britz. I am a project manager for the Aviation Security Systems for Raytheon Technical Services Company, LLC, who I will refer to in the rest of my document as RTSC. RTSC is a solely-owned subsidiary of Raytheon Company.

Thank you for giving me the opportunity of testifying before the Subcommittee today on RTSC's role in the Reveal pilot project at Newark International Airport. In the interest of time, the testimony I will give you today is an abridged version of the written testimony previously submitted to the Subcommittee.

Under a competitive contract, RTSC provided a broad range of engineering services, including project management, engineering design, site preparation, installation supervision and data collection and analysis. Under my leadership, RTSC performed all these services for the Reveal pilot project at Newark International Airport.

Stakeholders in the project included TSA, the Port Authority of New York and New Jersey, Continental Airlines, Reveal Imaging and RTSC. The goal of the project was to verify the capabilities of integrating the Reveal machines, CT–80's, into a baggage handling system in a live airport environment. Up to this point, the Reveal machines had been tested in two other pilot sites, Gulfport and JFK, but only in a standalone configuration.

In the Reveal pilot sites, a trade-off was made on the number of machines to test. Three machines were chosen because of the cost and space constraints at Newark. Two machines of the three were configured in an exit-integrated configuration and one in a more expensive fully integrated configuration. The fully integrated configuration added an automatic storage conveyor, an in-feed conveyor, so that the Continental Airlines ticket agents could place several bags on the storage conveyor at one time and the bags could automatically feed into the machine when the machine was ready to accept them. The addition of the storage conveyor increased the time the ticket agent could spend helping passengers in check-in.

During the design phase, the pilot project, under other configurations were considered, including ones proposed by Reveal Imaging and Continental Airlines. Ultimately the configurations that were chosen for the project were those that allowed the project to meet the goals at the lowest cost installation-wise.

The Reveal machines were installed around August 2005 and were ready for use before the conveyors and control systems needed for the integrated configurations were available. When this situation became clear, TSA decided to add a preliminary test phase to the project in which the Reveal machines were first tested in a standalone configuration. The standalone configuration ran from August to October 2005, which included about 2,600 bags that were scanned at the time. The integrated configuration ran from October to November 2005, during which time 20,000 bags were scanned.

One concern that arose during the project was getting the Continental ticket agents to use the Reveal machines. Using the machines required the agents to take the additional responsibility of moving and lifting the bags to the machines. Prior to the pilot project, passengers were responsible for taking their bags over to the large explosion detection systems, the CT–5500's, located adjacent to ticket counters.

In summary, the Reveal project at Newark International Airport was successful in validating the exit and fully integrated configurations in an operational environment, which until this point had not been tested at any other Reveal pilot test sites. This is a significant step forward in demonstrating the capabilities of the Reveal machine.

Mr. Chairman, I would like to thank the Subcommittee and you for giving me the opportunity to testify. I would be pleased to answer any questions you may have or your members may have. Thank you very much.

Mr. MICA. Thank you. And we will hear from our other witness, which is Susan Baer with Newark Airport. You are welcome and recognized.

Ms. BAER. Thank you. Chairman Mica, Congressman Pascrell, and the other distinguished members of the Subcommittee, good morning. I am Susan Baer, General Manager of Newark Liberty International and Teterboro Airports for the Port Authority of New York and New Jersey.

On behalf of the Port Authority, I would like to thank you for calling this hearing and giving me the opportunity to testify today. As an aside, thank you, Congressman Pascrell, for your comments recognizing the hard work that we have done in cooperation with the TSA and the airlines at Newark to improve our overall baggage screening from a rocky beginning. It has certainly gotten much, much better.

My comments will be brief, and I request that my entire statement be read into the record.

The Port Authority of New York and New Jersey is a bi-State public authority that was created by our States with the consent of Congress. Its mission on behalf of the States of New York and New Jersey is to identify any critical transportation and infrastructure needs of the bi-State region and provide access to the rest of the Nation and the world.

The role of the agency's aviation department is to run four airports that are critical to the Nation's trade, travel, commerce and tourism: the rapidly growing global gateway, JFK; a major domestic and international hub, Newark Liberty International; the premier business airport, LaGuardia; and a vital corporate and gen-

eral aviation reliever, Teterboro; as well as an urban helipad, the downtown Manhattan Heliport.

These facilities handle aircraft as diverse as a Piper Cub, a Sikorsky S–76, and the Boeing 747. They were used by nearly 100 million passengers in 2005, an increase of over 6 percent, making our airport system the busiest in the Nation.

Newark is now leading this growth with almost 15 percent more passengers using our airport so far this year. This activity produces annually an astounding $62 billion in economic activity and directly and indirectly supports more than 375,000 jobs in the New York-New Jersey metropolitan region.

The Port Authority and the TSA are joined together in a common pursuit: exploring new territory and meeting difficult challenges to provide the best possible security at our airports. Like all partnerships, to be successful, the parties need to agree on objectives, share with each other our concerns and provide mutual support. To cultivate and sustain our good relations with the TSA at New York Liberty, as well as our other airports, we hold weekly conference calls, conduct bi-weekly inspections, organize tabletop problem solving exercise and cross-train TSA and Port Authority staff in an effort to continue to improve communications and cooperation.

Now, as operator of one of the Nation's busiest airport systems, it is vital to us that the aviation screening system be responsive to our increasing passenger and cargo traffic. It needs to be effective, customer-focused, performance-driven, risk-based and be given adequate resources to fulfill its mission. We are concerned that at a time when our passenger traffic is on the rise, TSA staffing strategies are still subject to a cap. Currently, the hard-working TSA screeners at Newark are screening 40,000 bags per day.

The TSA continues to face enormous physical capacity challenges at the airports, as passenger traffic rose rapidly. Some of our older terminals, like those at the airports across the Country, there is often a lack of adequate space for checkpoint and baggage screening. It is difficult and expensive to reconfigure existing facilities, and sometimes it is just not possible to add security lanes without undertaking expensive capital construction, a project that neither the financially ailing airline industry nor we are well equipped to undertake.

We also need to reconfigure bag rooms to provide for the installation of equipment that is currently located and still located in some of our passenger terminal lobbies. We are doing just that in the terminal we run at Newark with in-line screening in place by 2008 in Terminal B. But we need not look just to physical expansions but also to embracing technology to achieve the same or better results. We strongly support the implementation of the Department of Homeland Security Office of the Inspector General March 2005 audit findings that call for the greater deployment of technology.

As has been noted, Newark has served as the pilot airport, or one of the pilot airports, for the Reveal baggage machines. The Port Authority was not a partner in that pilot, but I know others on this panel can speak to this project and its results. We were eager for this test, and many others, because we firmly believe that the TSA must test equipment at very busy O&D airports like Newark, to

ensure that new technology is up to the rigors of a system that is at capacity much of the day and is expanding quickly.

The Port Authority, as I have noted, is committed to serving as the DHS-TSA test bed for technology to enhance security. We have participated in tests of biometric access control, vehicle tracking, video situational awareness, radio frequency identification technology, cargo tracking, cargo radiation detection, ASDE–3 radar use for perimeter surveillance and many more. We urge the Government's continued investment in pilots of promising technology, and ask the TSA to facilitate the exchange of information among airports about the results and lessons learned from pilot tests.

Some technologies that can have demonstrable benefits to securing our airports are not so new, and it confounds us that resources have not been made available. Our experience with costly terminal evacuations due to breaches of security screening points has convinced us that closed circuit television surveillance of both the screening points and the baggage rooms is a necessity. The costs of terminal evacuations or delayed flights are enormous. One of the ways to resolve issues at checkpoints is to go to the video tape. But sadly, the TSA has not installed such surveillance, nor has it been planned for the future.

We at the Port Authority are committed to CCTV and it is a commitment that is shared by our local TSA staff. As a result, the Port Authority has begun to dedicate some of our capital resources to begin installation of cameras in areas where we think it is appropriate.

Again, I would like to thank the Committee for this opportunity to share some of our views. We look forward to working with the Committee in the future on our shared goal of effective, customer-focused and performance driven risk-based security.

Mr. MICA. We want to thank you, and I want to thank the other witnesses.

We have three votes. We will be back at 11:30, so take a breather. This Subcommittee will stand in recess until that time.

[Recess.]

Mr. MICA. The Subcommittee will come back to order.

We have heard now from all the panelists. We can get into questions. I will start with a few.

Let's start with Reveal. I want to concentrate some on the Newark situation and then I have some more general questions.

Reveal, how long did it take to get your equipment certified?

Mr. ELLENBOGEN. The process took about nine months.

Mr. MICA. About nine months. And I have you were certified in December of 2004, approximately?

Mr. ELLENBOGEN. Correct.

Mr. MICA. Did you all come up with the initial configuration, recommended configuration for the Newark installation?

Mr. ELLENBOGEN. I believe we may have.

Mr. MICA. This is your configuration here?

Mr. ELLENBOGEN. I believe so.

Mr. MICA. As I see it, it was to be networked and there was to be one point of resolution, is that correct?

Mr. ELLENBOGEN. That was the intention of the design, yes.

Mr. MICA. OK. Now, you have been up to Newark and seen, of course, the way it is installed. It doesn't look anything like this. And I talked to your folks and they said one of the reasons that it doesn't look like this is because TSA only allowed it three machines, so it is impossible to have this configuration. So that was the first decision to influence the configuration we ended up with, is that correct?

Mr. ELLENBOGEN. I know TSA allocated three machines. I believe their intention, though, was really to test the operation of the equipment as opposed to this particular configuration of the equipment.

Mr. MICA. But it would be impossible with three machines to do this configuration. You did not do the installation, did you?

Mr. ELLENBOGEN. We did not.

Mr. MICA. So TSA did the installation, and Mr. Britz, you did the installation. You were just, when you came, or Raytheon came into this, there was a three-unit decision previously made, is that correct?

Mr. BRITZ. That is correct.

Mr. MICA. The space that they have in your first proposal probably isn't any larger, I have been there, than what the space they are now using with three Reveal pieces of equipment and two InVision 5500, is that—I mean, the footprint is about the same, isn't it?

Mr. BRITZ. I will answer that. The CTX5500's were put in over a year ago, prior to the Reveal machines. So they were running as the primary baggage screening machine.

Mr. MICA. That wasn't my question. My question is the footprint would be about the same as if we had five of these Reveals.

Mr. BRITZ. The five Reveal machines, from our point of view, wouldn't fit in this constraint, in the space there, as well as the cost consideration.

Mr. MICA. But again, I could put this configuration, the original recommended, in the same footprint that you have now, with the two 5500's?

Mr. BRITZ. I—you can get five machines in there, but there are requirements that the five machines won't fit in there.

Mr. MICA. You had two 5500's sitting out on the right side. There are three, now, you don't see them here, do you?

Mr. BRITZ. They are in front of the ticket counter. They are not even behind the ticket counters. They are way out in front.

Mr. MICA. They are off to this side, it would be in front of us. But they take up a lot of space. They are at least three times as big as Reveal, aren't they, two, three times?

Mr. ELLENBOGEN. Approximately.

Mr. MICA. OK. So my point is, again, if you have 5500's that are taking up as much space, so we never got the configuration, TSA, do you want to respond to why? Well, first of all, again, from our standpoint, we have no place in the Country now where we have a major airport, where we have Reveal installed in an integrated fashion and to demonstrate its capability of this type of proposed use. Is that correct, Mr. Null?

Mr. NULL. That is correct. The current installations are the Newark installation and JFK installation, which essentially integrate the back end of the machine but not the front end of the machine.

Mr. MICA. We also had Continental Airlines, who said that this was going to be a model, too, of using this newer, less costly—they sat right at that table right in that area there, they are not here today, and said that this was going to be tried at a larger airport, in fact, one of their biggest hubs, and it would result in less cost, less personnel.

With this configuration, Mr. Ellenbogen, the way I saw it, you have to have one person to do the resolution and then one person to handle and feed the bags, is that correct? Except at one point. There is only one conveyor that is connected to the machine.

Mr. ELLENBOGEN. I believe that is the way TSA is operating them today.

Mr. MICA. So this configuration requires two people at each machine. It was anticipated that actually the baggage handler and possibly one person could serve a couple of the lanes, and making certain that the, I said lanes, the conveyor belts, to make sure that the bags went incorrectly. So you have to use twice as many personnel in this configuration, is that right, Mr. Ellenbogen?

Mr. ELLENBOGEN. I am not familiar enough with the installation requirements.

Mr. MICA. Well, I am telling you, that is what they told me it requires.

Mr. BRITZ. The number of resolution people required by how many bags are alarmed. Normally in design, that is normally between 20 and 30 percent of the bags that we have to assume are alarms. That drives how many people are in the resolution area. If you have that many machines, if you have five machines, you will have a lot more than one person doing resolution.

Mr. MICA. No question about it. But resolution, TSA resolution on this was not at each machine. It obviously takes more at each one with each machine. If we had had five and they did it in a half-baked configuration, it would take five people, right? If it isn't networked and remote? And we do have that in-line, we have remote resolution, do we not?

Mr. NULL. We have remote resolution for the larger machines today, the multi-plexing. This was a year ago when this went in, and the reality is that we did not have the multi-plexing capability in place at that point in time, which would have required five TSOs, one at each of the machines, for resolution at that point.

Mr. MICA. So is your equipment, Mr. Costello said your equipment doesn't have a high enough throughput rate. But with the configuration and conveyor from the counter to the machine, is it possible for an agent to do more than the machine's capability? What is your capability for throughput?

Mr. ELLENBOGEN. The system was certified at 80 bags an hour originally. We currently have software going through recertification.

Mr. MICA. So it was certified by TSA at 80 bags an hour?

Mr. ELLENBOGEN. That is correct.

Mr. MICA. And everyone thought that that would be a good application, that an agent really couldn't do many more bags than that per hours with this configuration?

Mr. ELLENBOGEN. In the configuration that is currently being shown, that would be sufficient to keep up with a couple of ticket agents.

Mr. MICA. OK. So we use two times as much personnel. What about the networking?

Mr. ELLENBOGEN. I think there might be a misunderstanding. What we deliver, the product, the system and the software, it then goes through TSA approval process. And at the time that this installation happened as part of the pilots, we had not yet been through the complete approval process for all the multi-plexing and the networking.

Mr. MICA. So there was no capability at that time?

Mr. ELLENBOGEN. It hadn't been approved yet.

Mr. MICA. Did anybody from Reveal ask or Raytheon ask if that was a feature that we wanted incorporated?

Mr. ELLENBOGEN. That was not a feature that we were testing here or required to test at the site.

Mr. MICA. So TSA set the parameters, basically?

Mr. BRITZ. Because the machine wasn't ready at the time for that capability.

Mr. MICA. Is it capable now?

Mr. ELLENBOGEN. It is, yes.

Mr. MICA. Was this configuration just something pie in the sky that your guys made up, or is it possible to have this configuration work?

Mr. ELLENBOGEN. It is possible to have it work.

Mr. MICA. To have it networked and have remote resolution?

Mr. ELLENBOGEN. It is possible to have it work, networked, with the remote resolution and these are some of the capabilities that we needed to pass with TSA.

Mr. MICA. I see Mr. Null shaking his head affirmatively, yes.

Mr. NULL. Yes, sir. In fact, in Jackson Hole, we will be evaluating the full——

Mr. MICA. OK, Jackson Hole, Gulfport, Gulfport may be a nice installation for that nice size. My problem is, I only have a handful of our major airports that are completed with in-line expensive systems. This was a machine that cost a third less or whatever it is and takes up less space. It has the potential for saving us billions of dollars for installation at a large airport. That was the whole reason for the Newark experiment. But I do not have, we do not have that in place in any large airport.

Do you think we could try this at one airport to see if it is possible? And I am told the machine works very well. I heard the resolution is excellent, the imaging, all its capabilities meet or exceed the L–3 and the InVision.

Mr. NULL. Mr. Chairman, the Jackson Hole implementation has eight Reveal machines. So we will get a large enough sample to evaluate the scalability of this system in a large airport.

Mr. MICA. Are you going to do it at one of the 29 big airports? Or should we just say forget this, we will throw it away and that is not a solution?

I mean, this takes billions of dollars, whether it is one point X billion for his equipment and maybe his equipment won't work. Or it is going to take us multiple billions to go in and gut the bowels of some of these major airports and put the big equipment in, in-line system.

The worst part about all this, and most of this is classified, I can't speak to, is that the system that we have now in place, the failure rate is just totally disastrous. The hand processing with these 16,800 people, the results we have that have been made public, it is disastrous. Where you have the in-line systems, and we have seen the results with the good equipment, the high-tech equipment, it is just the opposite. And the whole purpose of this isn't to employ 16,800 people and have bags go through some process that is farcical. It is to actually achieve some detection of dangerous materials.

Well, I will go on. Let me just give a shot to Mr. Costello and then we will get back.

Mr. COSTELLO. Thank you, Mr. Chairman. Let me follow up on your comment about the success and failure rate, and it is classified, and we have had briefings. I do want to point out that while it is unacceptable, let me say that I firmly believe that it is a far better system than it was prior to 9/11. So I want to go on record saying that and make sure that everyone understands that.

Mr. MICA. I am with you there, too.

Mr. COSTELLO. So let me go on. Dr. Null, I want to clarify a few things here. It may not be important to everyone in the room, but I think for the record we need to clarify some things. Number one, did TSA ever agree to supply five CT–80's at Newark for the pilot program?

Mr. NULL. No, sir. No, we did not.

Mr. COSTELLO. And so without question, there was no agreement to provide five machines?

Mr. NULL. Not following the analysis that we did on the required throughput.

Mr. COSTELLO. OK. Mr. Britz, in follow-up to the Chairman's question about the space issue here, who chose the space for the five machines? Number one, there was no agreement to provide five CT–80's. But space that they were going in, you were saying from your perspective that the space was not adequate, did not meet the regulations to place five machines in that space, is that correct?

Mr. BRITZ. That is correct, in regard to the requirements of the maintenance of the machines, the requirements of the controls that are required for the machines, and the resolution space that is required between the machines, those machines are, as we feel, the layout was too tight, and that they wouldn't fit in the space.

Mr. COSTELLO. So you are saying that Continental chose a site that was too small to accommodate all five CT–80's, if five CT–80's were to be set up, is that right?

Mr. BRITZ. That is correct.

Mr. COSTELLO. Let me, Ms. Berrick, let me ask you, as the Chairman pointed out correctly, and we all know that it has been two years since TSA has been required to screen all checked bags, using explosive detection systems, including EDS and ETD, one,

does TSA in fact check all bags using the explosive detection system, 100 percent of the time, just for the record?

Ms. BERRICK. The answer is no, TSA doesn't electronically screen 100 percent of checked baggage, 100 percent of the time using EDS and ETD. What I can say publicly is that the vast majority of the time they are screening baggage with EDS and ETD, but there is a small percentage of time that they use what they call alternative screening procedures. Those are essentially procedures involving the use of EDS and ETD in non-standard ways. It could be canine explosive searches, it could be physically opening the bag and searching its contents.

There are some trade-offs in security effectiveness with these procedures that we have found. We have made some recommendations to TSA and their management of alternative screening procedures. One is that they conduct covert testing in an operational environment to get more data on how effective these procedures are. And we also recommended that TSA strengthen their process for monitoring the extent to which alternative screening procedures are used, because we have found weaknesses in how that information is recorded.

Mr. COSTELLO. In order for TSA to meet the requirement, they are mandated by the Congress to meet the requirement, what do they need in order to comply, in terms of equipment and staff, in your judgment?

Mr. NULL. Well, I think the issue that we face today is the fact that there are always events that will occur that sort of exceed and go beyond your normal operating capability. If equipment goes down, then what would normally be able to cover a load, then we have to respond and have some type of alternative procedures to manage risk in that fashion.

I think our main challenge today is to be able to stay ahead of the growth and to be able to preserve that level of coverage. We do use, as Ms. Berrick had said, typically electronic screening, but it uses protocols that are different in order to achieve higher throughput. That is all based on security issues that may be generating because of bags piling up or safety issues.

Mr. COSTELLO. I have a few more questions for you, Dr. Null, but the same question to you, Ms. Berrick.

Ms. BERRICK. Thank you. I would agree. TSA will always have to use alternative screening procedures to some degree, because equipment breaks down, there will be unforeseen events, there will be some crowding. What would help in mitigating the use of that is the deployment of these optimal screening solutions. TSA estimates that if they are not able to deploy these solutions that they will have to field more EDS equipment and put it in airport lobbies, they will need more screeners.

Another factor that could help prevent the use of alternative screening procedures, or not prevent it, but reduce it, is increased technology, higher throughput, lower alarm rates. There are some technologies that offer that and should be available within two to three years.

Mr. COSTELLO. Dr. Null, according to TSA and GAO, the throughput Reveal CT–80 screens about, or has the capacity to do about 80 bags per hour. There is some confusion. We have TSA and

GAO saying 80 bags an hour, we have Reveal's web site that says that the equipment does 100 bags an hour. Apparently, I am informed that the contract on the pilot project at Newark required Reveal to screen 120 bags per hour. Is that correct?

Mr. NULL. That is my understanding, sir.

Mr. COSTELLO. So TSA was requiring Reveal to screen 120 bags per hours, knowing that the equipment could not screen 120 bags per hour?

Mr. NULL. It certainly was our objective, as a part of the pilot, to work with Reveal to get to that level. And we are continuing to work with them in a number of changes and upgrades to both their software as well as their hardware, to achieve that number.

Mr. COSTELLO. TSA has informed me that "a plan was in place for Reveal to meet their contract. They have not, so a monetary penalty is currently in place." Is that correct?

Mr. NULL. That is correct.

Mr. COSTELLO. And what is the monetary penalty that has been assessed against Reveal for its failure to comply?

Mr. NULL. I am sorry, sir, I don't have that ready, so I will have to get back with you on that exact value. Mr. Ellenbogen may have the answer to that, but I don't recall at this point.

Mr. COSTELLO. Can I ask you if Reveal knows?

Mr. ELLENBOGEN. Reveal knows.

[Laughter.]

Mr. COSTELLO. And?

Mr. ELLENBOGEN. I believe it is a 10 percent holdback on the contract value. I just would like to clarify for the purpose of this discussion, the pilots took the output of the Phoenix program, which was the Reveal CT–80 at 80 bags an hour, to test its operational throughput. The pilot contract did not require 120 bags an hour. There was not a throughput requirement on that pilot contract.

We then entered into a procurement contract in September, after the pilots were done, a procurement contract we started shipping against in December. During the course of that contract, we were required to come up to 120 bags an hour. That software has been delivered to the TSA, it is currently going through their approval process, and has been for some time.

We are actively working with TSA to get that approved and deployed, so we can live up to our end of the contract requirement and release the holdback.

Mr. COSTELLO. So back to my question, has there been a monetary penalty assessed against Reveal?

Mr. ELLENBOGEN. Not for the pilot program, no.

Mr. NULL. For the procurement side. I stand corrected. The 120 was in the procurement contract, rather than in the pilot contract. That 10 percent holdback is on the procurement that we have underway with Reveal at this point.

Mr. COSTELLO. Let me ask you also, from Reveal's standpoint, in fiscal year 2005, the DHS appropriations conference report said that Reveal's CT–80 should be deployed particularly in medium and small airports. Do you believe that the CT–80's are better suited for the medium size to small airports, and not the major hub airports in the Country today?

Mr. ELLENBOGEN. I believe the CT–80 is idea for medium to small airports and for certain larger airports with particular requirements, we can help solve some of those challenging problems with in-line screening options. And we are working with TSA to demonstrate that capability.

Mr. COSTELLO. Dr. Null, would you want to comment on that, is the CT–80 more appropriately used at small to medium or at large?

Mr. NULL. I think in terms of general deployment, medium and small are the right sweet spot for that capability. I think at larger airports, as you look at optimizing how you are going to do baggage screening, there certainly will be locations where Reveal is a good solution for a part of an overall solution, but not for large scale, common infrastructure with high, high volumes.

Mr. COSTELLO. I have a few other questions, Mr. Chairman, but my time is more than up. Hopefully we will come back with a second round.

Mr. MICA. Are there other members with questions? Mr. Pascrell.

Mr. PASCRELL. Mr. Null, if the capacity of the product was in question, why did you choose to fund the project using this technology at one of the Nation's most busy airports, busiest airport?

Mr. NULL. Well, sir, we had a specific application with the Continental location here. The reason, first of all, that we went from five to three is that three would meet the capacity requirements of that checkpoint environment. So we were really looking in this pilot to do operational utility testing, to look at different configurations of the equipment. And we were not throughput constrained by the equipment by going with the three.

Mr. PASCRELL. Who was responsible for the design of these machines?

Mr. NULL. The design was a cooperative design that was agreed to by Continental, ourselves and Reveal.

Mr. PASCRELL. So you consulted with Continental Airlines and Newark Airport in designing the machine?

Mr. NULL. Everybody signed off on the design, sir.

Mr. PASCRELL. They signed off on the design?

Mr. NULL. Yes, sir.

Mr. PASCRELL. So your answer to that question is yes?

Mr. NULL. Yes.

Mr. PASCRELL. Thank you very much.

I would like to talk about the GAO report, Ms. Berrick. A clarification. You say on page four of your testimony that TSA report that, in May of this year, TSA report under current investment levels, I just want to make this clear in my mind, installation of optimal checked baggage screening systems would not be completed until approximately 2024, given the cost of each of these machines, if we continued to go on the same pace that we are going right now, investing the same capital money, we would not complete this project until 2024. Is that accurate?

Ms. BERRICK. That is correct. That is what TSA estimates.

Mr. PASCRELL. And then you said that the TSA is currently collaborating with airport operators, airlines, et cetera, in an effort, that TSA expects to complete by early fall of 2006. So if there was some cost sharing here, we are just talking about what is designed

right now, what is on the boards right now. If you want to do this with all the airports, it will take us until 2024?

Ms. BERRICK. The estimate about 2024 is related specifically under current investment levels, what has been appropriated. The effort that is underway right now is TSA is partnering with airports and other stakeholders to try to identify some creative financing and alternative financing solutions. That effort, which is supposed to be completed in the fall, is supposed to put forth recommendations on how they can better fund and support the installation of these systems.

So hopefully the optimal screening solutions can be deployed before 2024.

Mr. PASCRELL. Because that doesn't say much for the system we are putting into effect, if we are going to have to wait until 2024, luckily, in order that it be completed in the airports that we want to do this.

Ms. BERRICK. It is really how much the up-front capital investment that is required to do——

Mr. PASCRELL. Well, let's talk about the up-front capital. Where is the money, give me general percentage numbers of where the money is coming from.

Ms. BERRICK. There are a few sources. One is through the letter of intent agreement. TSA awarded eight LOIs for nine airports, which resulted in a funding obligation for the Federal Government of about $950 million.

There is also the Airport Improvement Program, which is no longer available to support the installation of in-line systems. Quite a few airports did get in-line systems through the AIP funding.

TSA also uses a mechanism called Other Transaction Agreements, where they fund portions of in-line systems, usually for smaller systems. So if you break that out, the Federal Government spent about $950 million, or will through the end of next year, through the LOI process. And they have spent about $350 million through the Airport Improvement Program and Other Transaction Agreements.

Mr. PASCRELL. And it is obvious that we are not going to get this system anywhere near done unless there is capital investment from the Federal Government.

Ms. BERRICK. The money will need to come from somewhere. And that is why it is important——

Mr. PASCRELL. You know the budget for 2007, then, that has been proposed by the Administration. Is there sufficient money in there to continue the project to the degree that you and I and everyone else is talking about here?

Ms. BERRICK. I don't know the extent to which the funding request would support TSA's top 25 airports where they want to fund in-line systems.

Mr. PASCRELL. Otherwise, the money has to come from the airlines and the airport?

Ms. BERRICK. That is right.

Mr. PASCRELL. And they are just jumping for joy to do that, right?

Ms. BERRICK. Well, hopefully through this study that is going on right now, there will be some recommendations coming forth on how to more creatively finance these systems.

Mr. PASCRELL. Any time we hear study, particularly in terms of the Department of Homeland Security or TSA, we are holding our breath as to when it will be completed and what will it show in the results. So I take you for full granted, and I accept the research of the GAO. You do a terrific job, all of you do a terrific job in terms of helping us in our oversight responsibilities.

Mr. Ellenbogen, given that your technology was designed for this low throughput, what adjustments are needed, do you need to make, to compensate for the high traffic at Newark Airport? And what were your expectations for the performance of your technology in an integrated EDS system?

Mr. ELLENBOGEN. The system was intended as an alternative to the large in-line approach. And with the configuration that you see up on the screens now, there isn't a requirement for high throughput. As we have described in the past, it is like a PC approach, networked computing approach, as compared to a mainframe approach.

We are not claiming it is a panacea. It is not the only solution. It is an alternative. It offers some flexibility. The original certification was at 80 bags an hour. We anticipate upcoming certification at approximately 110 to 120, going toward 140 bags an hour. So we are increasing the throughput of the system to apply to different ways of deploying it to optimize its utility to TSA.

Mr. PASCRELL. You would agree with the Chairman's analysis and description of the convoluted system that now exists at Newark Airport? Do you agree with his description of what exists there right now, or do you disagree with it?

Mr. ELLENBOGEN. I think what exists there now was designed for the pilot application, to test the system's reliability and operational capability. I think it can be optimized.

Mr. PASCRELL. By?

Mr. ELLENBOGEN. I would have to sit down and work with TSA to understand what the trade-offs might be.

Mr. PASCRELL. Let me ask a question, if I may, Mr. Chairman, to Ms. Baer. It is my understanding that the Port Authority's role in the Reveal pilot project was not as partner, we heard that term used very loosely in here, but it was mainly an administrative role. Would you agree or disagree with that?

Ms. BAER. I would agree with that. While we have been partners in some of the technology enhancements at the airport, in this one, our only role was to do the kind of review that you would do if someone wanted to put a piece of equipment in a lobby floor, to make sure the floor could support it, that the electrical systems are adequate, and that sort of review. So we did a review, but not of the operation, just of the physical entities.

Mr. PASCRELL. So this separation of activities at Newark Airport, we have to go through two processes. That is not acceptable to you, is it? Or is it?

Ms. BAER. We always do those kinds of reviews, because as the landlord of the airport, we need to ensure that the physical plant

of the airport maintains its integrity. So that kind of process we would always do.

We are then often partners in technology applications, but not necessarily. Some are more appropriate than others. We run a terminal, there it is more appropriate for us to be very involved.

Mr. PASCRELL. Let me tell you what my concern is, in conclusion. And I have overstayed my welcome here, but let me take a shot at this. My observation is this. The issue is the way Raytheon set up the machines. They are not configured to be fully integrated. I think that this is a simple conclusion.

Full integration was the whole point of the pilot project, that I remember. So it seems that we got off on the wrong foot in the first place. Why do you think Raytheon did this? Was it because of the configuration of the airport? Was it limited space? Why?

Ms. BAER. I think I have to defer to Raytheon on that.

Mr. PASCRELL. Well, you were there.

Ms. BAER. I actually wasn't there when this decision was made.

Mr. PASCRELL. Well, you should have been. My point is this. I am looking at Newark Airport, this is what is on the table right now. And I am wondering if we are trying to squeeze too much in a small box. I don't know how much Newark is capable of. We are talking about a lot of jobs here. I want to make sure it is safe. We are trying to do the best that we can, all of us here in this room. We thank everybody for their service.

I am not so sure that, for instance, that this particular problem, I can think of several others, is not reflective of an airport that is trying to squeeze too much out of its assets and resources. I am not so sure about that. I want it to grow. We can't. There is no place to put another runway. Everybody wants the land at Newark Airport. That is easy to say. We are backed up to Cleveland, for crying out loud, making landings around 4:00, 5:00, 6:00 o'clock at night, 7:00 o'clock.

I just would ask you to take a look at that, so it is fair to everybody here, so that we are not simply kidding ourselves. We are going to have to make some capital investments at Newark Airport in order to expand the place, the area, where we can put any machines, correct?

Ms. BAER. Absolutely.

Mr. PASCRELL. Thank you, Mr. Chairman.

Mr. MICA. Mr. Honda.

Mr. HONDA. Thank you, Mr. Chairman. I have three quick questions. They are questions with San Jose Airport in mind. So you can take the questions in that context.

There is about $156 million ultimately that would be available in fiscal year 2007 for EDS installation at 9, 10, 11 airports. About how many airports would you expect to fund in the coming year and how does that compare against the number of high priority airports that will be ready to begin work next year?

Mr. NULL. Well, sir, first of all, the reason we only have 150 is that it is the final year of the LOI payments. And then things would free up later at the current level, if that were the case.

I think that it will depend very dramatically on what airports we do. Now, we have got 25 airports that are the high priority. Those will float, depending on the ability or the willingness of the particu-

lar airport to participate. So how far down we get will be somewhat driven over the next few months of getting a better feel for who can participate, who will be willing to participate and we will develop our 2007 spending plan.

So it is difficult, depending on whether it is a $14 million project or a $100 million project, that list will vary dramatically. We should know that within the next few months.

Mr. HONDA. OK, then as TSA makes decisions on the allocation of the 2007 EDS installation funds, exactly what criteria will you be using and how significant are factors like construction readiness, integration into ongoing terminal renovation, or significant local financial share of the project, as San Jose is?

Mr. NULL. Well, the first priorities are all about security and safety. So we will look for those airports where we know that we will have the most restricted capacity, where the growth will be pushing us to the limit to maintain baggage screening. So those will be at the top of the list. We also are looking for those airports where we have the highest injury rates, and those have a level of higher level of priority as well.

We have to be very opportunistic in how we manage that priority list. And when we have airports that are ready to step up and have, we can intercept a greenfield terminal or new airport, those are important things for us, and we will shift the priorities based on the ability to get that local funding and to intercept a construction project.

Mr. HONDA. OK. Some airports will have TSA-validated designs for EDS installation, ready to begin construction by the end of this year. If TSA is not using letters of intent to commit future funding, how can those airports move forward without losing the possibility of these 75 percent Federal reimbursement to which they would be entitled, if they simply waited for another year or two? And is it possible to enter into, I guess what you call the other transaction agreements, or other agreement now, that protects their full reimbursement from future appropriations, assuming those appropriations ultimately are made?

Mr. NULL. Mr. Honda, that is exactly the cost study, sharing study that we have underway right now with the airports and air carriers. We are looking at a number of potential vehicles to achieve funding levels similar to LOI shares. And those will all be sort of put on the table here in the next few months.

So we are not going to leave anything off the table. We are going to sort of put it all out there, look at what may be potential multiple vehicles for doing the funding and as a part of that study, we are also making sure that we understand those airports who have stepped up and invested early how they will play in that going forward as well.

Mr. HONDA. Well, San Jose is in that mix of 25?

Mr. NULL. Yes, sir.

Mr. HONDA. So how all these factors play together will determine where San Jose may end up in terms of the lineup. It doesn't sound like there is a priority in terms of who is first, who is second. But it is based upon a mixture of criteria.

Mr. NULL. Well, the top 25 are based on capacity and peak demands that we know we are going to hit over the next few years.

That will shuffle based on the availability of funds and willingness of local airports. So where that is going to end up will be a result of a number of discussions with different airports over the next few months to see how that final shakeout will look.

Mr. HONDA. Thank you, Dr. Null.

Mr. MICA. Thank you.

I am going to ask a few questions and then yield to Mr. DeFazio and others that have questions.

First of all, I have the record from Continental. Continental worked with Reveal in November and December of 2004 to devise a pilot plan. That pilot plan that is on the board there, that says EWR. What does that stand for, Ms. Baer?

Ms. BAER. That is the designator for Newark Airport, EWR.

Mr. MICA. OK. That is not LAX, that is not Phoenix, it is not Denver, it is not O'Hare. That was devised for Newark. Then it says in February they met, it took them until, they had to wait until February to meet with TSA to discuss the proposal. And then somewhere, someone made a decision that they wouldn't get, basically this plan was rejected, is that correct? Was there ever any plan to use five machines, Mr. Ellenbogen? Was there any plan to use five machines, or is that something you just dreamed up?

Mr. ELLENBOGEN. There was a lot of discussion with Continental about how we could configure the systems.

Mr. MICA. Who did this plan? Did Continental do that plan? Did the airport? Where did this plan—and there is more to this plan, because there is a whole report. I have seen the report. I want a copy of that report for the record. All I have got is that. Can you provide me with that?

Mr. ELLENBOGEN. I am not sure which report you are referring to, sir.

Mr. MICA. The rest of the details that go with this proposed configuration. This is for Newark Airport. Who has it? Do you have one, Mr. Null?

Mr. NULL. I will certainly find out, and if we do we will supply that.

Mr. MICA. I want the rest of the plan. Because this just didn't come out—and I don't have Continental here, but I have the scenario of how this was developed. And then they went to TSA.

Somewhere, TSA made a decision, and I heard that, and it may have been funding or something that they only received from Congress enough for eight machines. Is that correct?

Mr. NULL. The plan was to utilize eight machines for across the three pilots. But that was not the reason for the three machine decision at Newark.

Mr. MICA. Well, somewhere—they sat down, here is the testimony, and I am going to have them in and swear them in, they sat down and developed this configuration for a large airport. This is all about a large airport.

You sat here and said that you believed that it may not be suited, or you said it would be suited only for medium and small?

Mr. NULL. And I think there will be situations——

Mr. MICA. Well, we will never know. We will never know. How will we know? The whole purpose of this was to have in one place at one large airport—we know it will work in small airports. We

know it probably will work in medium airports. The whole reason for this, for having another vendor even qualified, and you were qualified at—just for the record, where were you certified at, 80?

Mr. ELLENBOGEN. That is correct.

Mr. MICA. And you met that. TSA certified that, didn't they? Did you certify 80?

Mr. NULL. Yes, sir.

Mr. MICA. Yes, you did. So this is—don't put a lot of mumbo-jumbo on the table here. You certified that you had the equipment that would do that. And it was supposed to be installed in one airport, because this Congress is going to have to spend billions of dollars, billions of dollars. How much would it cost to change out your entire system and put an in-line with a large InVision or L–3 equipment?

Ms. BAER. Throughout the entire airport?

Mr. MICA. Yes, throughout your entire airport.

Ms. BAER. Right now we have——

Mr. MICA. How much would it cost——

Ms. BAER.—59 EDS machines at the airport. Hundreds of millions of dollars.

Mr. MICA. Hundreds of millions of dollars.

Ms. BAER. Yes, it would.

Mr. MICA. And we encouraged the private sector to come up with developing equipment that would be less costly. What is your, just ballpark, a third of the cost of an L–3, is that right?

Mr. NULL. Yes, sir.

Mr. MICA. A third? OK. Just for the record. So we will never know, and we have gone through this planning process, we have gone through buying the equipment, we will never know how much it is going to cost us. We have 3 major airports done out of the 29 that handle 75 percent of all our air passenger traffic. And Congress is trying to find a way to install efficient equipment? That is just not acceptable to me.

Somewhere, and I think it is TSA, if I see TSA going after Reveal in any way, and you are being awfully quiet, and I probably know why, because you are put in the middle of all this. All you supplied was the machines, is that right?

Mr. ELLENBOGEN. That is correct.

Mr. MICA. And you worked with them on this, whether you admit it or not, you worked with them?

Mr. ELLENBOGEN. With Continental, yes.

Mr. MICA. With Continental, OK. And you got the contract from them to install it the way they said, and they made the decision for the three machines, right?

Mr. BRITZ. That is correct.

Mr. MICA. OK. And you provided the space. And don't tell me that equipment will not fit in that space. I will go out and walk it with anybody here and some other folks. It will fit. And if you can fit two 5500's at the end and make the passengers walk around, don't tell me it won't take as much space. You can fit it in that blueprint.

So this is an absolute fiasco, a farce, it has set the entire Country back and 20 some major airports, because we do not know today whether this equipment in fact will work with that configuration.

You would think somebody would look at that, now, wouldn't you, and say, do we need to, now, you said that you didn't have the ability to network this and do the remote resolution. But somebody could look at it and say, that is the way it should be done, Mr. Null, wouldn't you say someone should have looked at that then and said that?

Mr. NULL. Well, certainly once we get the multi-plexing system, that will give us a lot more economies of scale and there will be some big advantages. The challenge that we have here, sir, is the fact that——

Mr. MICA. If anybody in TSA could just think of what we are trying to do, and put this together, in one location we could see if we could save billions of dollars and have a system that would work. But we may never know, because again, we have spent 18 months, almost 2 years with this disaster.

I have to scoot, and besides that, I am losing my cool. But let me yield to Mr. DeFazio. Mr. DeFazio, I will match you for emotion on any day. Thank you.

[Laughter.]

Mr. DEFAZIO. It is the Italian, Mr. Chairman.

[Laughter.]

Mr. DEFAZIO. I have already vented for the week. So I may be a little mellow today on other issues.

Generically, to Ms. Berrick, just broadly, we have confirmed through ongoing analyses that an investment in EDS generally at at least the 25 largest airports could have a payback, quite a short payback period, to TSA in terms of savings, is that correct?

Ms. BERRICK. Right. TSA initially estimated that for the nine LOI airports, they could recover the up-front investment in little under a year. But there have been some lessons learned since those systems were installed. TSA realized the need to develop best practice design guidelines for installing in-line systems. That would help and make the process more efficient.

They also realize that better technology with increased throughput and lower alarm rates would help facilitate cost savings. They are working right now on developing best practice design guidelines. There is some technology in the pike that will increase throughput significantly.

So the common knowledge is that there are still significant savings that can be achieved, not only savings, but also security benefits through underlying systems. But initial estimates may have been a little high. There have been a lot of lessons learned since then. But still, the savings are significant.

Mr. DEFAZIO. Well, and from further reading your report, we expect the earlier generations of these machines apparently are going to have a useful life of maybe 10 years. I don't know about the later ones. But let's just say, let's use 10 years. So for capital investment that has a 10 year expected life, perhaps within a third of that time period, the Federal Government could recapture its investment in operating savings in terms of personnel and other attributable costs?

Ms. BERRICK. That is possible.

Mr. DEFAZIO. So if we were running Government like a business, which the Republicans always tell us they want to do, we would probably be thinking about making these investments.

So Mr. Null, I am curious, you said you are looking at other potential vehicles for funding. I am curious what you might recommend, because Chairman Mica and I have mulled this over at great length. We tried to make a run on some Federal bonding and we were turned down by OMB and others. We feel that the Federal Government has an obligation to carry a substantial portion of the cost of these machines, not the airports, not the airlines. We are looking for some cost sharing, but not putting the whole bill on them.

So can you give us a couple of hints about what these potential vehicles might be?

Mr. NULL. I think as Ms. Berrick had indicated earlier in her discussion, there are a number of possible ways as far as service contracts, buy-leaseback options, potentially tax credit bonds, LOIs or something that would still be put on the table and then what we will have to understand and what are either the legislative or the scoring issues that would have to be addressed in order for those vehicles to be implemented.

So none of them are clean. So our challenge is to identify what the options are and then understand what actions will have to be taken in order to utilize those.

Mr. DEFAZIO. If we think this whole thing through and obviously baggage is not the only place we have a problem, I have tremendous concerns about carry-on bags, passenger screening in terms of explosives, and as the Chairman and I both said, two or three years ago now, when the Chechen terrorists took down the planes in Russia, this is probably our last wakeup call before somebody does that here in the United States.

What do you think the economic cost, anybody up there, the economic cost to the United States of America would be if two or three planes were blown out of the sky one day by terrorists? There were two in Russia, let's just be conservative and say two. Short-term, total interruption of air service and all that, let's say we decide a week or 10 days we can put planes up again, with some new measures of security. What are we looking at in terms of, when we look at how much it would cost to install this equipment? Anybody think that the cost would be less than the cost of building up these systems quickly?

I don't think so. Neither do I.

I guess the question is, when we are looking at prevention of terrorist acts and tragedy, when we are going to kind of look at what the potential downside is versus the annual scoring and/or that, and buy-leasebacks. We have seen what happened with the Boeing deal, not too great. Sometimes it is better for the Federal Government just to make the investment straightway up front. If we need to borrow some money to make that kind of investment, looking at the savings we are going to recoup, the benefits, the taxes that will accrue, we should do it.

With that, we have a problem with back injuries, big problems documented at TSA in terms of lost time, workers comp, injuries, all that. We have already talked about the issue of potential sav-

ings. So I guess what I am puzzled about here is, when we look at in-line systems, they will work some places. In some places they have the room to do it.

But GSA says here that up to 50 percent of the cost is for facilities and infrastructure modifications. And I assume that is not a worst case, that is an average? Because at some places, there isn't really any place to put them, right?

Mr. NULL. That is true.

Mr. DEFAZIO. So it could be considerably higher?

Mr. NULL. It can run considerably higher.

Mr. DEFAZIO. So I guess I am wondering why we wouldn't perhaps revisit or put more effort into this dispersed idea. I am not saying it is going to be most appropriate everywhere, but at an airport where the costs are going to be, where 75 or 80 percent of the cost are going to be in modifying the facility versus the cost of the equipment, why wouldn't we put out a relatively small amount of money to more adequately test in a proper configuration these sorts of systems?

Because I am just thinking that a mixed system where we avoid extraordinary costs at certain airports would be valuable. We always talk about, is it St. Louis, Jerry, that everybody has their own gate and we have all the security scattered around?

Mr. NULL. It is Kansas City.

Mr. DEFAZIO. Kansas City, sorry. So every airport is a little bit different, and it just seems to me we might want some more flexibility than trying to drive everybody toward the EDS, which we know works great. I have been to San Francisco, I have been to Heathrow and Manchester and seen those systems. They are great. But they aren't maybe the solution everywhere.

Do you think that this was a realistic test of the potential for dispersed technology, given the constraints on the number of machines we had? Do you think we disproved the possibility of doing it this way, since we didn't follow this original design, whoever created it?

Mr. NULL. First of all, as part of the strategic plan, we talk about optimized systems, not only in-line systems. So we recognize that these big central in-line systems are not the answer for every airport and we certainly would not propose that.

I don't think that this pilot has done anything to eliminate the possibility of utilizing this configuration in large airports. At the time we were setting this pilot up, it was to prove the technology's reliability, our ability to integrate into the takeaway systems and to match the throughput from the ticket counters to the capacity that we put in place.

Mr. DEFAZIO. So then this isn't a definitive test of whether or not a dispersed technology, particularly using well designed dispersed points, could possibly avoid a whole lot of structural costs and delays in terms of terminal modifications and those sorts of things?

Mr. NULL. And in fact, the Jackson Hole implementation will give us a fairly large scale test of integrated systems with multiplexing capability and allow us to project what would happen in a much larger airport at the same time. Then we can look for future possibilities where we would do that.

Mr. DEFAZIO. OK. So then this isn't definitive. I think the Chairman fears that we are going to somehow, going to disregard this possibility or this particular manufacturer because of the disappointments we had in this particular test. You don't find it definitive and you are not making any sweeping conclusions that would lead to that?

Mr. NULL. Not at all. We continue to work with Reveal on their ongoing system improvements and changes and we feel that Reveal is a critical part of one of the arrows in our quiver of how we are going to deliver optimized systems in the future.

Mr. DEFAZIO. OK. Well, as I do to all of the Administration folks who come before us on the Committee to talk about these issues, and I do it both here and in Homeland Security, I just urge you and/or your superiors to give us an honest assessment of what it would cost, how are we going to get there and it should not be constrained by the people at OMB. We are big boys and girls here, you give us a big bill, we can look at it and say, we can't do that, you will have to come up with something else. Or we are going to say, yes, maybe it would be worth it to avoid what happened in the Soviet Union here in the United States, or Russia, excuse me. The Soviet Union doesn't exist any more. You know, it would be worth that cost, and we will figure out a way to find the money and borrow it. We are the ones who should make that decision. I hope it doesn't get backstopped. So I just would give you that counsel.

Thank you, Mr. Chairman.

Mr. KUHL. [Presiding] As you can see, the Chairman has regained his Kuhl. No pun on that.

[Laughter.]

Mr. KUHL. I will yield to Mr. Costello.

Mr. COSTELLO. Thank you, Mr. Chairman. I do have a few questions, but let me yield quickly for a quick question from Mr. Pascrell.

Mr. PASCRELL. Thank you, gentleman from Illinois.

Mr. Britz, what adjustments did Raytheon have to make to the integrated placement design after a normal six to nine month delay and missing the peak travel time at Newark? And the second question is, what was the main cause of the delay?

Mr. BRITZ. The systems were ready. We were installing systems at both JFK and Gulfport at the same time. We had to do the site preparation at the site, which is running all kinds of conduits and running power to all the machine areas. We had to get the design ready for integration, which was getting control panels built, fabricated and installed. And as well as conveyor belts fabricated and installed. That all took place over a period of time.

Mr. PASCRELL. Well, you know that before.

Mr. BRITZ. Yes, we did.

Mr. PASCRELL. Well, you still had a delay of six to nine months.

Mr. BRITZ. We installed the first machine in Newark in the August time frame and had it operational.

Mr. PASCRELL. This system was supposed to be ready in when, exactly? When was this originally supposed to be in place?

Mr. BRITZ. I don't think there was a fixed date of when it had to be in place.

Mr. PASCRELL. There was no fixed date?

Mr. BRITZ. That I remember. I don't know.

Mr. PASCRELL. For the record, that is what you are telling us?

Mr. BRITZ. I don't have one in my notes right now.

Mr. PASCRELL. Well, then, how could it be delayed?

Mr. BRITZ. The project was initially slated to get done in the summer. We finished the installation and had the first machine in August and the second and third machines installed in August and operational in August at a standalone configuration. We didn't delay the project in regards to the integration. We ran it as a standalone configuration until the integration equipment was ready and then we installed the integration equipment. And then the machine was fully integrated and available for full integration testing in October.

Mr. PASCRELL. Is the system at this day, at this point in time operable?

Mr. BRITZ. I haven't been involved with the project since then, but I understand it is still running.

Mr. PASCRELL. Mr. Ellenbogen?

Mr. ELLENBOGEN. The system is being used every day to screen bags, yes.

Mr. COSTELLO. Thank you.

Dr. Null, let me just ask a couple of questions again for the record concerning the pilot at Newark. I understand that one of the machines did have entry integration. One, is that correct?

Mr. NULL. That is correct. The machine that was servicing the kiosks.

Mr. COSTELLO. And why didn't all three of them have both entry and exit integration?

Mr. NULL. Well, first of all, the machine with the entry integration services a number of kiosks. So there were multiple load points that were all supplied to that single machine. The reason that we did not integrate them into the ticket counter is because of matching the speed of the ticket counter processing with the capacity of the equipment required only two more machines, not four more machines.

So from a capital utilization standpoint, our cost per bag standpoint, we could achieve comparable throughput with only two machines rather than four machines. So that is why we did not integrate those machines.

Mr. COSTELLO. And what did it cost TSA to provide entry integration on the one machine?

Mr. NULL. It was approximately $400,000, somewhere a little over that. And that is a very specialized belt to deal with, a 90 degree turn, which is why it is a little more expensive.

Mr. COSTELLO. And why weren't the machines at Newark multiplexed?

Mr. NULL. We were at a stage where the software had not been finalized through the approval process or through the testing process. So we were not able to multi-plex those over to a single resolution point.

Mr. COSTELLO. And who made that decision, TSA or Raytheon?

Mr. NULL. Oh, that is a joint issue between Reveal and TSA and where they are at in their development process and where they are through the testing process with TSA.

Mr. COSTELLO. Mr. Chairman, I have no further questions, but I would like to give each of our witnesses the opportunity to make a final comment, very brief comment at this time, if any of them would care to.

Mr. KUHL. Do any of the panelists wish to make a final comment?

Mr. ELLENBOGEN. No, sir.

Mr. KUHL. Dr. Null?

Mr. NULL. No, sir.

Mr. KUHL. Mr. Britz? Ms. Baer?

Well, on behalf of the Chairman, thank you for coming and participating. I know the information that you have provided will be helpful as we move ahead in this Subcommittee. So I appreciate your coming and participating again.

And Mr. Ellenbogen, I think you are staying for the next panel. A glutton for punishment, I guess. We understand that you have already submitted your one written statement, so it will not be necessary for you to retestify. Thank you for coming. We appreciate it.

If we could, we will move on to the second panel. I would like to move right along, because we are getting the preliminary signals from the floor that there will be some upcoming votes in about an hour, maybe shortly before that. So at this point, if Mr. Todd Hauptli, Mr. John Wood, Mr. Louis Parker, Mr. Ellenbogen, you can retain your position right there in the center, and Mr. Tom Ripp, if they would like to take their positions.

Mr. Hauptli, I think I have it here that you are the Senior Vice President of Airport Legislative Alliance, the American Association of Airport Executives and Airports Council International-North America. We appreciate your participating this afternoon. Mr. John Wood, the Chief Executive Officer, Analogic Corporation. Mr. Louis Parker, President and CEO of GE Security. And Mr. Tom Ripp, who is the President of Security and Detection Systems, L–3 Communications Corporation.

Mr. Cooke, I don't have a bio on you. If you could just give me your allegiance at this point.

Mr. COOKE. Yes, I am sitting in for Mr. Parker. I am President of GE Security's Homeland Protection Division.

Mr. KUHL. OK, great, and welcome.

So to move right along, Mr. Hauptli, in accordance with the normal procedure, you have five minutes. We appreciate your participating.

**TESTIMONY OF TODD HAUPTLI, SENIOR VICE PRESIDENT, AIRPORT LEGISLATIVE ALLIANCE; JOHN W. WOOD, JR., PRESIDENT AND CHIEF EXECUTIVE OFFICER, ANALOGIC CORPORATION; DENNIS COOKE, PRESIDENT, GE SECURITY, HOMELAND PROTECTION DIVISION; THOMAS RIPP, PRESIDENT, SECURITY AND DETECTION SYSTEMS DIVISION, L–3 COMMUNICATIONS, INC.**

Mr. HAUPTLI. Thank you, Vice Chairman Kuhl. And for the record, I was laughing hard inside at your joke earlier.

[Laughter.]

Mr. HAUPTLI. I want to make one general observation and three specific recommendations. The general observation, a number of

the points were already made this morning. Three hundred million more passengers coming through the system within the next decade—today we are already leaving bags behind as planes are taking off, because they are not able to get through the screening process.

The Federal Government took this responsibility over and has frankly botched it. Two billion dollars has been spent on a $5 billion to $10 billion problem. And by TSA's own admission, it is 2024 at the current spend rate before we get this problem solved, which is completely unacceptable. The Federal budget process is getting in the way of real life economics. As was pointed out earlier today, anywhere from a year to three to four years is the payback period for putting in-line systems in place. Yet we don't have either the will or the resources, and it is probably a combination of both, to put these systems in place.

OK, for recommendations, three. One, we need to extend and expand on the current aviation security capital fund. The $250 million that is mandatory that is guaranteed is very helpful. This Committee attempted to make that $500 million, and the Appropriations Committee bested you, unfortunately. We have to scramble every year and try to get crumbs on the table beyond that $250 million.

So that program, which terminates next year, needs to be extended and strengthened. And parenthetically, I would add for the record, as we look to the FAA reauthorization bill next year, this mandatory spending issue—the guaranteed funding—it shows you how important it is to continue and strengthen the guaranteed funding in Vision 100, to make sure that the capital programs of the FAA are funded. Because otherwise they will be traded off against other transportation needs.

Secondly, we need these creative financing solutions, whether it is tax credit bonds, the letter of intent program or other mechanisms; the Federal Government is not doing its job on its own. And the private sector is willing to step in and help in that regard. But we need to have some meaningful programs that will work.

The TSA baggage screening investment study that Ms. Berrick and Dr. Null talked about earlier, we may see something out of that in the next few weeks. I would encourage this Committee to push hard to make sure that that study receives appropriate attention in Congress rather than simply sit on a shelf at TSA.

And then finally, I think we need to modify the screening partnership program that is currently in place, to make that a more meaningful option for airports. Specifically as it relates to the subject at hand today, we need somehow to be able to capture and utilize the personnel savings from putting in-line systems in place to pay for both the initial capital investment and the debt service on putting in-line systems in.

With that, I will yield back my time.

Mr. KUHL. Thank you.

Mr. Wood?

Mr. WOOD. Thank you. On behalf of Analogic, we appreciate the chance to testify. I would like to touch on four programs.

There has been considerable discussion about the Government's very large investment in in-line EDS systems and working with our

partners, L–3 Communications, we have had a TSA approval of a year ago for an upgrade for these systems. We provided about half of them in U.S. use. This was certified at 600 bags per hour, which I will point out is 6 to 8 times the throughput rate that preoccupied the last panel, with a 25 percent improvement in false alarm rate. It is multi-plexed, it is networked. It provides archived bag images of every bag that goes on an airliner for a 48 hour period. Many advancements.

We look forward to this being fielded. We are completing testing of this in a networked version, actually finished standalone testing. We have online networked testing underway at John Wayne Airport. We believe this is ready. And this will preserve and enhance the TSA's investment in these machines to make them continue to operate online for years to come.

Moving to next generation, we have developed, with TSA support, an extra large bore machine, shown here, able to process 1,100 bags per hour. And although there is some debate as to whether the Airbus Jumbo will be widely deployed, there is no debate over the fact that passenger throughput rates are climbing. There is a need to process many more bags and larger bags. This can handle a bag up to one meter by .6 meters, the largest snowboards, golf clubs, as well as small cargo, and do this at a very high rate in a very cost effective manner. And we expect to have this at the Transportation Systems Laboratory for certification early next year.

Our next challenge is to take the well proven CT Computer Tomography technique to the checkpoint, which I think everyone would agree is primitive, and that we are using the same two-dimensional x-ray techniques that were developed over 30 years ago for the hijacking crisis. Screeners are unable to find threats with this and it is very time consuming. So we have developed Cobra. It has several advantages. One, your laptop would not have to be removed from a briefcase as a traveler. Much higher throughput rate, 300 bags per hour.

And we tackled what we view as a very simple problem, and that the bin handling by TSA employees. It seems ironic to us that many TSA employees at checkpoints are not really participating in the screening process, but they are hauling plastic tubs back and forth. And a relatively straightforward bin retrieval system would take care of this, in addition to providing a much higher quality screening system. We had this system installed at Logan Airport, screened 37,000 bags. There are many things that screeners at an official TSA checkpoint missed, they were doing the best they could. But with conventional, two-dimensional x-ray, you are limited in what you can do.

This can be integrated into a smart checkpoint, and we are working with others to incorporate information, say, from a personnel screening system. Of course, there is talk of RFID tags, advanced techniques. And we believe that we can make the screening process much more pleasant for the traveler and provide a much more accurate screening process by using CT, so widely deployed and approved in checked baggage, and it is time to deploy that in carry-on baggage. And we have a system to do that. A lot of extensive field testing and going for certification again early next year.

Again, the previous panel had a lot of discussion about the secondary airports. And we would not suggest that in-line systems are appropriate for all airports. In fact, we have been engaged with the TSA to develop a version of our Cobra machine that would handle the secondary airports, but do it at a much higher throughput rate than the existing systems, namely, 300 to 350 bags per hour, a CT based solution. It doesn't occupy much floor space, it doesn't have to go behind the scenes. And in all of these systems, I would suggest that the issue that Chairman Mica raised, the 16,800 people working in the back office, the over 40,000 screeners working combined, we offer the prospective of greatly reducing that by not requiring a screener to look at every single bag, but rather look at only the alarmed bags and clear those.

So we have four programs underway. We would encourage Congress to provide TSA the funding to do the laboratory to bring these not only to the operational readiness trials, but also to bring those to implementation to provide better safety and a more economical approach to airline screening.

Thank you very much.

Mr. KUHL. Thank you, Mr. Wood.

Mr. Cooke?

Mr. COOKE. Thank you, Mr. Chairman, Congressman Costello and members of the Subcommittee, for this opportunity to discuss the current status and the future of checked baggage screening at our Nation's airports.

I will share with you GE Security's perspectives on the current deployment of EDS systems and how technology available today needs to be more widely deployed to increase efficiency, quality and security in air travel. Finally, I will discuss the need for research and development that will result in technology that significantly increases both security and productivity for the future of baggage screening.

Let's start by describing the known problems in baggage screening today. This picture that we have up shows one of the many standalone lobby-based EDS systems that we have at our Country's airports today. These lobby systems require manual handling of the baggage. Their throughput is significantly lower than with in-line EDS systems. And as you can see, the process can become quite chaotic during peak load times.

The process is inefficient and can lead to flight delays or bags missing planes. In fact, on a recent flight out of Washington Dulles, a pilot came on and announced to the passengers that in fact the flight would not have an on-time departure because over 3,000 bags needed to be loaded on awaiting aircraft, and their aircraft was one of those aircraft.

Flight delays due to inefficient bag screening was highlighted in a 2005 Washington Post article, where a Lufthansa spokesman said that it is not uncommon for an aircraft to wait 45 minutes to an hour, waiting for the checked baggage to be loaded on. Just to put that in perspective, the cost to an airline is estimated to be $760 per minute for a wide body aircraft. That means $45,000 per hour.

And then there is the additional cost of finding and delivering a delayed bag. IATA and SITA's WorldTracer service estimates that the average cost to the airline is $100 per bag.

In addition, the manual loading and unloading of baggage contributes to an alarming rate that has been discussed at this Committee of injuries and associated workmen's compensation claims that the TSA is facing, which is the highest in the Federal Government. In 2007, the budget is $55 million, it is estimated, as discussed earlier. This is an increase of 40 percent in just one year.

Fortunately, the industry has a solution that has been discussed for these problems, and that is in-line EDS systems. However, as this map shows, that we have put up, several of the Nation's top airports do not have letters of intent for Federal funding to implement in-line EDS systems. These include airports in New York, Washington, D.C. and Miami.

There has been some progress made. This is a picture of the lobby at the San Francisco International Airport. After installing the in-line EDS system, you can see how much the lobby was improved. It is dramatic. There is no longer a bottleneck for checked bags or passengers.

After installing in-line EDS systems, San Francisco saw injury claims for baggage screeners decline by 42 percent, and the total cost for workmen's compensation claims went down an amazing 77 percent. Just imagine if we had in-line systems at all of our major airports throughout the Country what could happen.

Options for the future, let me transition and talk about that. The problems are likely to escalate, driven by the increased enplanements, which will further stress the inefficient processes that we have in place today. The FAA projects that we will reach 1 billion enplanements in the U.S. by 2015. The current screening systems will be overwhelmed long before this if we don't act now to fund the deployment of automated screening solutions.

There is no more space for additional people or machines in lobbies. Automated technologies for improved security with less real estate and cost is the answer.

Finally, I would like to talk about technology development. Technology has progressed significantly in recent years, and is poised to make great advances in the near future. Since GE last testified before this Subcommittee in 2004, we have made a number of advancements. Each step in our technology road map is upgradeable to ensure that your investments are not wasted.

We recently released the CTX9400, which is currently in TSA certification. Its two major benefits include a projected 25 percent relative reduction in false positives, and a 50 percent reduction in shield alarms. And as you know, with shield alarms, they are the hardest to resolve and require opening up of the bag. The release of the CTX9800 is scheduled for 2008, and it will further increase throughput and lower operational costs.

GE certified the first actual next generation EDS technology and x-ray diffraction system which automates threat resolution. Broader leaps in EDS technology are being developed through the longer range Manhattan II program. GE participates in this important DHS R&D effort.

In summary, the future of checked baggage screening, passenger checkpoints, rail, public transit and other security technology applications depends on investing in a development path that leads to affordable, effective, non-intrusive security solutions. As air traffic grows, the throbbing headache that we feel today is going to become a full-blown migraine. The pain will even be felt by smaller airports due to the hub and spoke system that we have.

Eventually, another terrorist event or the crushing weight of an inefficient system will force a less desirable reactive response. GE stands ready to work with the U.S. Government and all stakeholders to increase security through effective and cost-saving technology.

Thank you, Mr. Chairman.

Mr. KUHL. Thank you, Mr. Cooke.

Mr. Ripp.

Mr. RIPP. Thank you, Mr. Chairman, members of the Committee.

I am very pleased to have this opportunity to appear before you to discuss what we can do to improve passenger baggage screening. As you know, since its certification by the FAA in 1998, L–3 has been one of two suppliers to the TSA of high throughput explosive detection systems. Since that time, we have deployed over 625 systems. We are the first to go into an in-line configuration at Boston's Logan Airport, and we are the first to develop a networking capability, enabling central screening operations, all the while providing systems to the TSA for the lowest cost, lower by $300,000 versus similar systems.

Rather than read my entire testimony, I would like to summarize for you what I believe to be some of the key points. First, we need to focus on detection and operational efficiency, which translates into reduced overall cost to deploy and operate. If we continue to deploy without an operational focus, the long-term costs of our Nation's aviation security infrastructure will become an overwhelming burden, which it already is.

Second, a simple review of the TSA budget clearly indicates the problem areas, the people costs. The cost are high, I believe the budget has greater than $2.5 billion next year, and it will continue to grow unless security leverages the efficiency current technology is capable of providing.

Third, we need to deploy more EDS systems for in-line installation. I think the number of airports with in-line EDS has been talked about here at about 23. That leaves about 80 of our Nation's largest airports with inefficient standalone installations. Both the TSA and the GAO have reported that in-line baggage screening could reduce the dependence on TSA screeners by up to 78 percent. The math is pretty simple. The sooner in-line EDS systems are implemented, the sooner the TSA can begin to save significant annual recurring costs.

Fourth, currently deployed explosive detection systems are preferable to existing trace detection systems. Why? Trace detection is slower, it is labor intensive and has poorer detection capability. Again, as noted by the GAO, replacing trace detection equipment with EDS units will increase security, increase throughput and reduce the number of screeners required.

Fifth, save costs and increase the value of current assets by refurbishing the older, standalone units. Why do this? These systems can be brought to as-new condition and be upgraded with the latest software releases for approximately one half the cost of purchasing a new EDS. If the TSA procures new systems for transition to the more cost-effective in-line installations, the standalone systems can then be refurbished and redeployed to those airports that are growing and require greater levels of capacity.

Sixth and lastly, focus development dollars on the deployment of alternate technologies, which when added to the currently deployed systems, offer very effective paths to increased detection capabilities with much lower false alarm rates. For the most part, next generation development programs will focus on the introduction of bigger and higher throughput machines. I believe these machines will have a higher cost base and therefore a limited applicability to the general airport market worldwide. Instead, work with industry to develop lower cost alternate technology which utilizes the existing platforms as its base. The result will be cheaper and far more effective as we strive to provide more flexible capability.

The bottom line is we need to more widely deploy our current technology to improve the overall level of airport security. If we simply develop bigger, faster systems, which cannot be cost effectively deployed across the majority of our air travel system, we will leave gaps that may be exploited. As an example of less than optimal approach to technology is our Nation's checkpoints. Industry continues to offer emerging technologies that when deployed, do little to improve overall detection and worse yet, slow down throughput. L–3 is creating and will pilot shortly an advanced checkpoint solution, which incorporates multiple technologies for screening of both passengers and their carry-on baggage.

We have simple goals. We want to accommodate 300 plus passengers per hour in a single system that reduces screener requirements at the checkpoint by 40 percent, all with improved detection. This advanced checkpoint would screen both people and their carry-on baggage at a targeted cost of little more than the carry-on baggage screening systems currently under development.

I appreciate having this opportunity to share our views, and I look forward to answering your questions.

Mr. KUHL. Thank you, Mr. Ripp.

Mr. Ellenbogen, given the four previous statements, did you have anything you wanted to add before we go to questions?

Mr. ELLENBOGEN. All I wanted to add was that Reveal was also one of TSA's two selected partners to develop carry-on baggage inspection EDS systems, under their CAMBRIA program. We will be delivering the first CT–80FX this fall, which will automatically look for explosives and weapons in carry-on baggage.

We share the other witnesses' desires to improve the overall performance of our checkpoints, while reducing labor and see that as a great opportunity to do so as we move forward.

What we have learned over the last few years it that stakeholders must work together. There is great advantage to be had with TSA, the airports, airlines and the manufacturers to work together to optimize these systems. I don't think we have taken advantage

of all those opportunities in the past. So I appreciate the opportunity to speak here today.

Mr. KUHL. Thank you.

Let me yield at this time to Mr. Costello.

Mr. COSTELLO. Thank you, Mr. Chairman.

Mr. Hauptli, let me ask you, you mentioned in your written testimony about a number of in-line financing alternatives, including the reauthorization, as you mentioned in your testimony here, of the Aviation Security Capital Fund. Is it your opinion that reauthorizing the capital fund is the best and simplest and most direct alternative for financing the EDS?

Mr. HAUPTLI. Yes, sir, and it would be optimal if it could be increased.

Mr. COSTELLO. Very good. Other than providing more funding for the in-line EDS, what are some of the other things? Is there anything else that you believe that TSA could do to get the EDS system installed?

Mr. HAUPTLI. What can TSA do to improve the installation process?

Mr. COSTELLO. Yes, other than money and financing, what does TSA need to do in order to bring the EDS system online?

Mr. HAUPTLI. There aren't that many problems in this area that money can't solve, Mr. Costello.

Mr. COSTELLO. So it is money?

Mr. HAUPTLI. It is mostly money, yes, sir, resources. Again, TSA has tried, but they are within the Department of Homeland Security. The Department of Homeland Security is within the Administration. The Office of Management and Budget has put its heavy boot on TSA and TSA hasn't figured out a way to lift that off. So the LOI process has been stifled and there are a lot of airports with very much pent-up demand for systems that we are just short of funding on.

Mr. COSTELLO. Mr. Wood, what is the cost of the AN6400 field upgrade, and how much savings, in your opinion, would the TSA realize by utilizing these upgrades?

Mr. WOOD. We estimate the cost of the kit, Mr. Costello, at $150,000 and estimate the install cost at around $25,000. I think the answer to your second question is more difficult, because for instance, we were certified, as I mentioned, at 600 bags per hour. The question is, can the airport's baggage handling system fully take advantage of this capacity, does this allow increase or are they maxed out for other reasons. And I think it will take some field testing to see what this 25 percent in false alarm rate results in.

I would say one of the key advantages is networking or multiplexing. In other words, when an alarmed bag pops up in one EDS, that bag will be displayed in the next available screen. An if onscreen resolution is permitted, then it moves along its way. So I look forward to being able to answer that question more quantitatively.

Mr. COSTELLO. You mention in your testimony that contractual and other issues have resulted in delaying the AN6400 upgrade at John Wayne Airport. I wonder if you might elaborate on that.

Mr. WOOD. Yes, sir. As I mentioned, we have tested successfully in a standalone operation at the Southwest counter at the Phoenix

Sky Harbor airport, but are looking forward to the TSA accelerating the implementation and the placement of a contract so that we can get four of the machines in a networked application, because well, as I mentioned, we were certified a year ago. We believe that, we expect no glitches, no bugs in the operational testing. We are ready to go. So as soon as the TSA is able to complete that testing, we believe the Government budget provides perhaps for 60 of these machines to be modified with a kit, and we understand that perhaps 150 to 200 are in in-line applications now and would greatly benefit from this upgrade.

Mr. COSTELLO. When do you expect Analogic's carry-on baggage real-time assessment, Cobra and King Cobra, to be certified?

Mr. WOOD. Next spring. We began this development on our own company's money. As a result of close collaboration with the TSA, we have modified it, the TSA is looking for new and additional threats, as you know. So we have made quite a number of changes. We have one of these devices at the laboratory as we speak. As I mentioned, we have screened 37,000 bags at Boston Logan Airport, and we would hope to pass the hurdle of formal certification testing early next year.

Mr. COSTELLO. Will the King Cobra fit behind the ticket counter like the Reveal CT–80?

Mr. WOOD. I believe it is somewhat bigger, three times the throughput rate. And so one of these machines would accommodate two or three of the existing x-ray machines, or the current version of the Reveal machine. So I would suggest, sir, that you could find a place to put it and have the same throughput rate without expanding the floor space requirements.

Mr. COSTELLO. Mr. Ripp, how many DX6000's are in existence right now, being used?

Mr. RIPP. We have close to over 700 systems installed worldwide.

Mr. COSTELLO. And how many are used here in the United States?

Mr. RIPP. About 625 are installed in the United States.

Mr. COSTELLO. Very good. Mr. Chairman, that is all the questions that I have at this time, thank you.

Mr. KUHL. Thank you, Mr. Costello.

I don't want Mr. Ellenbogen to feel left out, so I will start with you. As you look back at your experience now, Mr. Ellenbogen, obviously you have had a little bit of trial and error through the process here of the implementation of this new kind of screening process, I am interested in what you think the Government should do differently in that experience that you had. How can we make this operation go smoother? I would just appreciate your thoughts.

Mr. ELLENBOGEN. I would say the amount of time that it takes to go from submittal of a system into the certification and approval process, followed by actual certification into what they call FAT&E, which is first article acceptance, then into pilot, then into procurement. That cycle is long, to state it simply.

So streamlining that process would certainly help every supplier at this table.

Mr. KUHL. Anything as it relates to you being a small business, in your operation, that we could do differently that would make it easier?

Mr. ELLENBOGEN. Nothing in particular about being a smaller business. Reveal, we have been very pleased with the process we have gone through with TSA. In the last six months, we have deployed more than 60 machines. We are shipping at a rate of a dozen systems a month right now and they are going into the airports, they are being installed quickly and inexpensively, as advertised.

And we believe that TSA has moved this process along very quickly. It is always too slow for a small company, but from a Government perspective, it has been lightning fast.

Mr. KUHL. I appreciate that.

Mr. Ripp, let me just follow up. You had talked a little bit about refurbishment. I am interested from an economic standpoint what you see as cost savings, if you can give me some sort of an example, as we talk about taking some of the existing equipment out, refurbishing. What are we talking about as far as savings go, percentages if you have them, dollars if it is easier to explain it that way.

Mr. RIPP. Sure. We have estimated if we take a system out of a standalone configuration, some of the ones that are in-line are difficult to peel out of the conveyor belt systems in place. But the standalones can be brought back, we believe we can upgrade those, worst case, for about half the cost, which is about $450,000. Right now we sell a new system for $880,000. So we estimate about half the cost.

It is a mechanical upgrade, and it a software upgrade. It is important to note that software upgrades are available to also increase detection capability and lower false alarm rates now, which we could include in equipment to reduce, again, screener content.

It is our thought that that equipment could then be redeployed to the mid-size airports that where capacity requirements dictate the need for a machine that can do, in standalone configuration, let's say 350 bags per hour, or in an in-line configuration, to 650.

I also want to note that there are smaller airports where they hook up and connect to a very simple baggage handling system where the cost is not the millions of dollars that we heard on the earlier panels, but maybe $500,000 to $1 million just to hook up, so that the system can be fed automatically.

Mr. KUHL. OK. Do you view essentially reselling the equipment, then, after you refurbish it, to another airport?

Mr. RIPP. We would envision that the TSA would then redeploy this equipment to airports that are heavily dependent upon trace or want higher throughput EDS. We have not looked at the possibility of reselling the equipment off to another vendor.

One of the advantages of TSA is, of course, we could offer extending the warranties. And as was mentioned earlier, I believe, by one of the members, using the assets that have already been purchased wisely and extending their useful life.

Mr. KUHL. Good, thank you.

Mr. Cooke, a question, what do you think the biggest problem or hurdle is relative to the implementation of the new technologies?

Mr. COOKE. You are thinking of in-line EDS in particular, Mr. Chairman?

Mr. KUHL. That is what I am thinking, yes.

Mr. COOKE. I think frankly it is financing, it is leveraging the dollars we talked about earlier. I mean, clearly, the bottleneck is getting airports ready for the equipment and the economics are staggering. So there has to be a way, and I know there is a working group looking at it, and we are participating, getting ideas through our GE capital arm, at how to finance these in-line EDS installations.

Mr. KUHL. So it is the finance side of it? That was Mr. Hauptli's comment, that there is not enough money out there for people really to make the conversion or the introduction of the equipment.

Mr. COOKE. I think the business case is compelling, as everybody has talked about. It is execution now from a finance point of view. And the appropriations dollars are just not there, so let's look at financing alternatives.

Mr. KUHL. Any thoughts, given your perspective, and maybe Mr. Hauptli, you would like to jump in as a comment to Mr. Costello about financing not being enough, you talked about the $250 million levels. Is $500 million enough, or is it going to take more than that?

Mr. HAUPTLI. Sir, it is going to take more than that. Again, the Federal Government has contributed $2 billion to this problem that ranges, estimates range from it being anywhere between $4 billion and $10 billion. So would we like to get it in billion dollar chunks? You bet. But is half a billion dollars a year better than a quarter of a billion dollars? It is a start.

Mr. KUHL. I guess my question really kind of goes to, OK, what can you spend. We could appropriate, we do it every week, practically, another $10 billion here, or whatever, for whatever purpose it may be. But often times, when we appropriate money, it just can't go out the door fast enough. So I guess the question, what I am looking really for is what level is really a good level of anticipated ability to actually expend and acquire the equipment that is necessary to process? It is like a bridge, you can only build it so fast, or a building, you can only build it so fast. So you can only spend the money so fast.

Mr. HAUPTLI. Mr. Kuhl, I would submit to you that the companies represented at this table would have no trouble whatsoever ramping up to spend a billion dollars a year, and we could get this done in 2 to 3 years, as opposed to the next 16 years, which is the pace that we are currently on.

Mr. KUHL. OK. That is a great answer. That is what I was looking for.

Mr. Wood, do you want to chip in on that one?

Mr. WOOD. Yes, sir, I would.

Mr. KUHL. Notice that play on words there?

Mr. WOOD. Yes, thank you, very good.

[Laughter.]

Mr. WOOD. I will chip in. I would suggest that it is not necessarily new money being appropriated, but how the existing money is being spent. I believe that the Government peaked or began with 60,000 screeners shortly after 9/11, and it is now down to a little over 40,000 consuming, I believe, still close to half of the TSA's budget. I think you have heard from panelists here the prospect of greatly reducing that by automating the process, in the case

of checkpoint, not looking at every single bag, sometimes with two screeners, but only the alarmed bags. So I think if you consider the life cycle costing concept, this equipment pays for itself in a very orderly basis.

Mr. KUHL. OK, good.

Mr. Costello?

Mr. COSTELLO. No other questions, but I am sure the first panel would have preferred you to be in the chair instead of Mr. Mica. [Laughter.]

Mr. COSTELLO. Let me just thank the witnesses for being here today. Mr. Chairman, I have no further questions. I am sure that we will be revisiting this issue many times in the future.

Thank you.

Mr. KUHL. And gentlemen, on behalf of the Chairman, let me thank you for your willingness to come and testify. Like Mr. Costello said, this issue is not totally completed at this point. There is a lot of issues and a lot of work to be done. We appreciate your willingness to help us make the right decisions.

So thank you again for coming and your participation. This hearing is adjourned.

[Whereupon, at 1:20 p.m., the subcommittee was adjourned.]

**THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY**
**STATEMENT OF SUSAN M. BAER**
**GENERAL MANAGER**
**NEWARK LIBERTY INTERNATIONAL AIRPORT**

**COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE**
**SUBCOMMITTEE ON AVIATION**
**2167 RAYBURN HOUSE OFFICE BUILDING**
**UNITED STATES HOUSE OF REPRESENTATIVES**

# AIRLINE PASSENGER BAGGAGE SCREENING: TECHNOLOGY AND AIRPORT DEPLOYMENT UPDATE

**JUNE 29, 2006**

Chairman Mica, Congresswoman Kelly, Congressman Weiner, Congressman Pascrell, Congressman LoBiondo, and other distinguished members of the Subcommittee, good morning. I am Susan Baer, General Manager of Newark Liberty International Airport for The Port Authority of New York and New Jersey. On behalf of the Port Authority, I would like to thank you for calling this hearing and giving me the opportunity to testify today and to share with you our thoughts regarding the airline passenger baggage screening. My comments will be brief and I request that my entire statement be entered into the record.

The Port Authority of New York and New Jersey is a bi-state public authority created in 1921 by our States with the consent of Congress. Its mission on behalf of the States of New York and New Jersey is to identify and meet critical transportation infrastructure needs of the bi-state region and provide access to the rest of the nation and to the world. The role of the agency's Aviation Department is to run four airports that are critical to the nation's trade, travel,

commerce and tourism – a rapidly growing global gateway, John F. Kennedy International (JFK); a major domestic and international hub, Newark Liberty International (EWR); the premier business airport, LaGuardia (LGA); and a vital corporate and general aviation reliever, Teterboro (TEB); as well as an urban helipad, the Downtown Manhattan Heliport (DMH). These facilities can handle aircraft as diverse as a Piper Cub, a Sikorsky S-76, the Boeing 747-400 and soon the Airbus A380. These airports were used by nearly 100 million passengers, an increase of over 6 percent over 2004's total, making our airport system the busiest in the nation. This activity produces annually an astounding $62 billion in economic activity and directly and indirectly supports more than 375,000 jobs in the New York/New Jersey metropolitan region.

The Port Authority of New York and New Jersey has entered into a partnership with the Federal Government on managing airport security. Specifically, the Port Authority and the Transportation Security Administration (TSA) are joined together in a common pursuit, exploring new territory and meeting difficult challenges. Like all partnerships, to be successful, the parties need to agree on objectives, share with each other our concerns and provide mutual support. To cultivate and sustain our good relations with TSA at Newark Liberty as well as our other airports, we hold weekly conference calls, conduct bi-weekly inspections, organize tabletop problem solving exercises, and cross-train TSA and Port Authority staff in an effort to improve communications and cooperation. Of course, to be successful, we need committed backers in Congress and the

Administration who provide oversight while remaining flexible and most importantly who are willing to fully support the endeavor financially. As operator of one of the nation's busiest airport systems, it is vital that the aviation screening system be responsive to our increasing passenger and cargo traffic. The aviation screening system needs to be effective, customer-focused, performance-driven, risk-based and be given adequate resources to fulfill its mission. I am also proud to report that the Newark recently established an airport-wide security task force under the leadership of Port Authority Chairman Anthony Coscia to ensure that the airport is doing everything possible to focus on security issues. The results of that effort were both enlightening and satisfying. Some of the group's findings were helpful in determining what areas need more attention and other findings found efficient and innovative processes that have been put in place on behalf of the traveling public. The findings were also shared with our colleagues at our other airport facilities to further improve their security plans and procedures.

We recognize that the TSA had a very tough job in quickly establishing its screening operation after September 11, 2001, and the passage of the Aviation and Transportation Security Act (ATSA). With the advent of TSA, aviation screening has become much more focused than that which existed before its establishment.

Ideally, we would like to measure aviation screening performance in terms of an objective set of performance measures. We would like a well-defined set of objectives for each component of the screening process for which we would receive regular feedback. For checkpoint screening such measures as contraband intercepted, average wait times, maximum wait times and staff courtesy are some of the basic measures for which airports desire regular feedback.

Screeners are the front line in the battle to protect our nation's airports from terrorism. Air passengers traveling through the high-profile, fast-paced New York/New Jersey region need the confident assurance of the TSA's diligent screening standards, and sufficient numbers of screening personnel to meet the heavy volume of traffic of our terminals. We are concerned that at a time when our passenger traffic is on the rise and surpassing previous levels, TSA staffing strategies continue to focus on the artificial screener cap.

Of course, screeners can't do it alone. The TSA also faces enormous physical capacity challenges at airports as passenger traffic grows rapidly. Unfortunately, at some of our older terminal facilities like those at airports across the country, there is often a lack of adequate space for checkpoint and baggage screening. It is difficult and expensive to re-configure existing facilities and sometimes it is just not possible to add security lanes without undertaking an expensive capital construction project that neither the financially ailing airline industry nor we are

well-prepared to undertake. We also need to reconfigure bag rooms to provide for the installation of equipment that is currently located in passenger terminal lobbies.

Even more baggage screening equipment is needed for our facilities since equipment needs cannot be determined by a ratio of total equipment to total passengers but must rather address the distribution of passengers across our many terminals at peak periods. In other words, the equipment isn't always where it is needed when it is needed. In-line baggage screening systems offer speed of processing, savings in personnel costs as well as the restoration of terminal lobbies for their original purposes. However, the cost of facility modifications to accommodate in-line screening is beyond our capacity to support.

As we anticipate the need for much more money for in-line screening modifications, we are persuaded that current industry proposals for reimbursement agreements based on future cost savings may be a workable solution to TSA – airport capital funding. The idea is to activate existing legislative authority or structure new authority allowing airports needing an in-line baggage solution to define implementation plan, estimate the cost of implementation, calculate the annual O&M savings anticipated once the system is operational, compare that to a baseline current cost for TSA at our airports,

then negotiate that annual savings amount to be dedicated to the airport until a federal contribution equal to 90% of the implementation cost has been received.

As an aside, airport operators such as ourselves that lease many of our terminals to airlines and third parties have found that the Letter-of-Intent (LOI) process has posed many difficulties because the TSA's legal agreements do not readily allow for the pass-through of LOI obligations to the leaseholder for the investment in improvements to their leaseholds, though these improvements are for the public benefit.

Funding isn't the solution for every problem. Understanding that it is costly and sometimes impossible to expand our existing facilities to accommodate the ever-increasing number of checked bags that need to be screened, the Port Authority wishes to help pioneer such alternatives as remote baggage check-in. The New York/New Jersey region is unique in having a densely populated urban core with rail access to our two major international gateways. In the coming years, thanks to the leadership of Governor Pataki and Governor Corzine, and with the help of Congress, we will have a magnificent new portico to New York City; the stunning Moynihan Station, as terminus for our two airport rail connections, would be an ideal location to offer remote-baggage check-in. We would like to partner with the TSA to take advantage of passengers' desire to surrender their baggage after leaving their hotels, freeing themselves for an afternoon of sightseeing before heading out to the airports for their evening departures. By taking control of this

checked baggage earlier in the day, the airport and TSA can alleviate peak-period congestion. This would alleviate added strains on old and overworked baggage handling systems and would permit the TSA to receive some checked baggage earlier than usual, thus permitting a more steady flow and more efficient screening. The TSA will be able to better deploy their resources if checked baggage screening is made more efficient. In order to move forward we seek federal resources to help construct and staff a remote baggage processing facility.

As the number one gateway to the nation, the Port Authority airports often serve as the initial point-of-entry for many international visitors. To ensure the safety and security of the nation, we commend efforts to implement new technologies that use biometrics and automation to efficiently and effectively process international guests. Improved passports with new biometric features are one element of this overall effort. While not the purview of TSA, we compliment the Department of Homeland Security (DHS) on the successful implementation of US-VISIT for arriving passengers. We hope that DHS incorporates the concerns of airports into the design of US-VISIT for departing passengers. Unlike US-VISIT inbound, which was incorporated into an existing process using existing Customs and Border Protection staff, US-VISIT outbound introduces a new process, with a new group of employees, inserted into the departure process after passengers would expect they had completed all the necessary formalities. Many passengers are likely to inadvertently run afoul of the new requirements

because the proposed outbound process is not intuitive and is unnecessarily burdensome.

Recognizing that necessity is the motherhood of invention, there are now many technologies that have evolved since the creation of the TSA just four years ago. We strongly support the implementation of the Department of Homeland Security, Office of Inspector General, March 2005 Audit findings that call for the greater deployment of technology. The TSA needs to deploy the latest technology to aid the aviation screening workforce in detecting the threats that face us today. Certainly technological advances in screening equipment may help lead to greater staffing efficiencies and improved detection capability. We are pleased to have been a test site for explosive trace detection portals for passenger screening. We look forward to the wide incorporation of this equipment at screening points, though processing speed and space limitations may constrain its full utility at this time. In addition, Newark served as the pilot airport for the Reveal baggage machines. The Port Authority was not a partner in that pilot, but I'm sure others on this panel can speak to that project and its results.

New technology designed for the screening points such as backscatter X-ray which basically sees through persons' clothing and reveals concealed weapons, in the future will give screeners powerful tools in detecting weapons and explosives. We urge the TSA to push forward in resolving the privacy concerns

attending this equipment so that it may soon be made available at airports. Other technology such as automated explosives and weapons detection equipment for the passenger screening points should be further developed and deployed, and cutting edge technology aimed at subject stress or duress detection should be explored. Because terrorist capabilities and techniques will continue to increase and evolve, it is necessary that Research and Development in detection equipment and techniques continue to address the ever-changing threat.

The Port Authority of New York and New Jersey is committed to serving as a DHS/TSA test bed for technology to enhance security at our nation's airports. We have participated in tests of biometric access control, vehicle tracking, video situational awareness, RFID (Radio Frequency Identification Technology) cargo tracking, cargo radiation detection, ASDE-3 radar use for perimeter surveillance, and many more. A number of our fellow airports are also conducting such tests under TSA and DHS auspices as well as at their own initiative. We urge the government's continued investment in pilots of promising technology, and ask the TSA to facilitate the exchange of information among airports about the results and lessons learned from pilot tests.

Some technologies that can have demonstrable benefits to securing our airports are not so new and it confounds us that resources have not been made available. Our experience with costly terminal evacuations due to breaches of

security screening points has convinced us that closed circuit television surveillance of the screening points is a necessity. In 2003, the Science and Technology Directorate of the Department of Homeland Security estimated the economic losses associated with terminal evacuations at American airports. They found that such evacuations at LaGuardia Airport alone ranged from $1.5 million to $5.95 million per incident. Surprisingly, after the TSA assumed control of the screening checkpoints and made the necessary modifications, the TSA did not install such surveillance. To our disappointment, the TSA has still not provided specific funding for CCTV installation at the checkpoints. The Port Authority's lease arrangements with its tenant airlines would require that any Port Authority expense for such work be charged back to the airlines. Of course, the financially beleaguered airlines object to an expense that is not mandated by the TSA. While the Port Authority has applied for the use of Airport Improvement Funds (AIP) for this purpose, it must be noted that the use of limited AIP funds for such worthy security projects thereby depletes support for other necessary airport capital projects traditionally funded by AIP, such as airfield improvements. However, our Board of Commissioners are committed to CCTV and as a result, the Port Authority has dedicated some of our own capital resources to begin installation of cameras in areas where we feel it is appropriate.

In partnership with the DHS Office of Domestic Preparedness, our agency has conducted security risk assessments of all of our facilities, and resolved to commit our resources to major capital security enhancement programs. These

enhancements go beyond the current required security standards of the TSA, and reflect the best practices of our industry, as well as new technology adapted from research and testing of the Department of Defense and the TSA's own Transportation Security Lab in Atlantic City, New Jersey. We expect that we will assist our colleagues at other airports in leading the way on these improvements. It is a costly endeavor, however. For airport enhancements alone, the Port Authority's Board of Commissioners has authorized over $200 million in capital work to harden our terminals and perimeters, to introduce new surveillance systems, and strengthen our access control systems. We endeavor to work in close partnership with the TSA on improving airport security, serving as test beds for TSA pilot projects, sharing our own research and experience, and developing and implementing new standards.

Port Authority Chairman Anthony Coscia has pledged the Port Authority's commitment in this regard, and offered our airports to be the first in the nation to implement the TSA's biometric standards for access control when they are officially promulgated. Similarly, our airports are currently pursuing additional background check procedures for workers in secure areas of our airports. At Newark Liberty, we conduct verification of social security numbers of employees working in these areas. We believe that this is a beneficial augmentation to the current TSA requirements for screening employees, and it should have the support of statutory authority through Congressional legislation and federal regulation.

I would again like to thank the committee for this valuable opportunity to share our views. We look forward to working with this committee in the future on our shared goal of effective, customer-focused, performance-driven, risk-based security.

United States Government Accountability Office

GAO

Testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

For Release on Delivery
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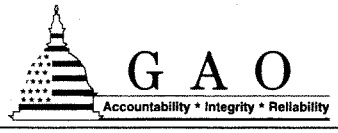
# AVIATION SECURITY

# TSA Has Strengthened Efforts to Plan for the Optimal Deployment of Checked Baggage Screening Systems, but Funding Uncertainties Remain

Statement of Cathleen A. Berrick, Director
Homeland Security and Justice Issues




GAO-06-875T

June 29, 2006

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**Highlights**

Highlights of GAO-06-875T, a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

AVIATION SECURITY

# TSA Has Strengthened Efforts to Plan for the Optimal Deployment of Checked Baggage Screening Systems, but Funding Uncertainties Remain

## Why GAO Did This Study

The Transportation Security Administration (TSA) has deployed two types of baggage screening equipment: explosive detection systems (EDS), which use X-rays to scan bags for explosives, and explosive trace detection systems (ETD), in which bags are swabbed to test for chemical traces of explosives. TSA considers screening with EDS to be superior to screening with ETD because EDS machines process more bags per hour and automatically detect explosives without direct human involvement. In March 2005, GAO reported that while TSA had made progress in deploying EDS and ETD machines, it had not conducted a systematic, prospective analysis of the optimal deployment of these machines to achieve long-term savings and enhanced efficiencies and security. GAO's testimony today updates our previous report and discusses TSA's (1) deployment of EDS and ETD systems and the identified benefits of in-line systems, and (2) planning for the optimal deployment of checked baggage screening systems and efforts to identify funding and financing options.

## What GAO Recommends

GAO previously recommended that TSA systematically evaluate checked baggage screening needs at airports, such as identifying the costs and benefits of installing in-line systems or stand-alone EDS. DHS generally concurred with our recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-06-875T.

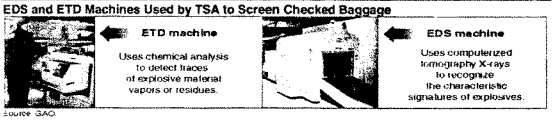
To view the full product, including the scope and methodology, click on the link above. For more information, contact Cathleen A. Berrick at (202) 512-3404 or berrickc@gao.gov.

## What GAO Found

Since its inception in November 2001 through June 2006, TSA has procured and installed about 1,600 EDS machines and 7,200 ETD machines to screen checked baggage for explosives at over 400 airports. However, initial deployment of EDS machines in a stand-alone mode—usually in airport lobbies—and ETD machines resulted in operational inefficiencies and security risks as compared with using EDS machines integrated in-line with airport baggage conveyor systems. For example, TSA's use of stand-alone EDS and ETD machines required a greater number of screeners and resulted in screening fewer bags for explosives each hour. In March 2005, we reported that at nine airports where TSA has agreed to help fund the installation of in-line EDS systems, TSA estimated that screening with in-line EDS machines could save the federal government about $1.3 billion over 7 years. In February 2006, TSA reported that many of the initial in-line EDS systems did not achieve the anticipated savings. However, recent improvements in the design of the in-line EDS systems and EDS screening technology now offer the opportunity for higher-performance and lower-cost screening systems. Finally, screening with in-line EDS systems may result in security benefits by reducing the need for TSA to use alternative screening procedures, such as screening with explosives detection canines and physical bag searches, which involve trade-offs in security effectiveness.

TSA has begun to systematically plan for the optimal deployment of checked baggage screening systems, but resources have not been made available to fund the installation of in-line EDS systems on a large-scale basis. In February 2006, TSA released its strategic planning framework for checked baggage screening aimed at increasing security through deploying more EDS machines, lowering program life-cycle costs, minimizing impacts to TSA and airport and airline operations, and providing a flexible security infrastructure. As part of this effort, TSA identified the 25 airports that should first receive federal funding for the installation of in-line EDS systems, and the optimal checked baggage screening solutions for the 250 airports with the highest checked baggage volumes. In February 2006, TSA estimated that installing and operating the optimal checked baggage screening systems will cost about $22.4 billion over 20 years and reported that under current investment levels, installation of optimal baggage screening systems would not be completed until approximately 2024. TSA is collaborating with airport operators, airlines, and other key stakeholders to identify funding and cost sharing strategies and is focusing its research and development efforts on the next generation of EDS technology.

**EDS and ETD Machines Used by TSA to Screen Checked Baggage**




Source: GAO.

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to participate in today's hearing on the status of the Transportation Security Administration's (TSA) efforts to deploy checked baggage screening technology to the nation's commercial airports, and to discuss our work in this area. As you know, after the terrorist attacks of September 11, 2001, which highlighted the vulnerability of U.S. aircraft to acts of terrorism, Congress passed and the President signed into law, the Aviation and Transportation Security Act (ATSA), creating the TSA and mandating, among other things, that all checked baggage at U.S. airports be screened using explosive detection systems by December 31, 2002.[1] To meet this requirement, TSA deployed two types of equipment to screen checked baggage for explosives: (1) explosives detection systems (EDS) that use specialized X-rays to detect characteristics of explosives that may be contained in baggage as it moves along a conveyor belt and (2) explosive trace detection (ETD) systems, whereby a Transportation Security Officer (TSO) swabs baggage and then inserts the swab into the ETD machine, which in turn can detect chemical residues that may indicate the presence of explosives within a bag.

In November 2002, Congress passed, and the President signed into law, the Homeland Security Act of 2002, which, in effect, extended the deadline for screening all checked baggage for explosives until December 31, 2003, for airports at which TSA was unable to meet the earlier deadline established by ATSA.[2] In March 2005, we reported that largely because of shortages of equipment and insufficient time to modify airports to accommodate EDS machines, TSA had been unable, at certain airports, to meet the 2002 congressionally established deadline to screen all checked baggage for explosives using explosive detection systems.[3] We also reported that at most smaller airports, where EDS machines are not installed, TSA screens solely with ETD machines. Further we reported that while TSA had made progress in deploying EDS and ETD machines, it had not conducted a systematic, prospective analysis of the optimal deployment of these machines to achieve long-term savings and enhanced efficiencies and

[1]Aviation and Transportation Security Act, Pub. L. No. 107-71, 115 Stat. 597 (2001). *See* 49 U.S.C. §§ 114(a), 44901(d)(1).

[2]Homeland Security Act of 2002, Pub. L. No. 107-296, 116 Stat. 2135. *See* 49 U.S.C. § 44901(d)(2).

[3]GAO, *Aviation Security: Systematic Planning Needed to Optimize the Deployment of Checked Baggage Screening Systems*, GAO-05-365 (Washington, D.C.: March 15, 2005).

security. Finally, in February 2006, we reported that TSA considers screening with EDS to be superior to screening with ETD because EDS machines process more bags per hour and automatically detect explosives without direct human involvement.[4]

My testimony today updates the information we reported in March 2005, and discusses (1) TSA's deployment of EDS and ETD systems and the identified benefits of installing in-line checked baggage screening systems at airports and (2) TSA's efforts to plan for and identify funding options for the optimal deployment of EDS and ETD equipment, including in-line checked baggage screening systems. My comments are based on issued GAO reports and testimonies addressing TSA's checked baggage screening program and our review of TSA documents related to the deployment of checked baggage screening systems, including TSA's February 2006 strategic planning framework for its checked baggage screening program.[5] We conducted our work in accordance with generally accepted government auditing standards. Appendix I contains a list of related GAO products issued on TSA's checked baggage screening program.

## Summary

Since its inception in November 2001 through June 2006, TSA has procured and installed about 1,600 EDS machines and about 7,200 ETD machines to screen checked baggage for explosives at over 400 commercial airports. However, initial deployment of EDS machines in a stand-alone mode—usually in airport lobbies—and ETD machines resulted in operational inefficiencies and security risks as compared with using EDS machines integrated in-line with airport baggage conveyor systems. For example, TSA's use of stand-alone EDS and ETD machines required a greater number of screeners and resulted in screening fewer bags for explosives each hour. Additionally, because in-line EDS checked baggage screening systems can significantly reduce the need for TSOs to handle baggage, installing them may also reduce the number of TSO on-the-job injuries. In March 2005, we reported that at nine airports where TSA has agreed to help fund the installation of in-line EDS systems, TSA estimated that screening with in-line EDS machines could save the federal

[4] GAO, *Aviation Security: TSA Management of Checked Baggage Screening Procedures Could Be Improved*, GAO-06-291SU (Washington, D.C.: February 28, 2006).

[5] Although we could not independently verify the reliability of all of the information we obtained, we compared it with other supporting documents, when available, to determine data consistency and reasonableness.

government about $1.3 billion over 7 years. In February 2006, TSA reported that a savings of approximately $4.7 billion could be realized over a period of 20 years by installing optimal checked baggage screening systems, including in-line EDS machines, at the airports with the highest checked baggage volumes. However, TSA also reported in February 2006 that many of the initial in-line EDS systems did not achieve the degree of anticipated savings initially estimated. TSA has since determined that recent improvements in the design of the in-line EDS systems and EDS screening technology now offer the opportunity for higher performance and lower cost screening systems. Screening with in-line EDS systems could also result in security benefits by reducing congestion in airport lobbies and reducing the need for TSA to use alternative screening procedures, such as screening with explosives detection canines and physical bag searches. TSA's use of these procedures, which are only to be used when volumes of baggage awaiting screening pose security vulnerabilities or when TSA officials determine that there is a security risk associated with large concentrations of passengers in an area, has involved trade-offs in security effectiveness.[6]

TSA has begun to systematically plan for the optimal deployment of checked baggage screening systems, but resources have not been made available to fund the installation of in-line EDS machines on a large-scale basis. In February 2006, TSA released its strategic planning framework for checked baggage screening aimed at increasing security through deploying more EDS machines, lowering program life-cycle costs, minimizing impacts to TSA and airport and airline operations, and providing a flexible security infrastructure. According to TSA, the framework will be used to establish a comprehensive strategic plan for TSA's checked baggage screening program. TSA expects to complete the strategic plan in early fall 2006. As part of this planning effort, TSA identified, among other things, the top 25 airports that should first receive federal funding for projects related to the installation of in-line EDS systems, and the optimal checked baggage screening solutions for the 250 airports with the highest checked baggage volumes. In June 2006, TSA officials reported that if the top 25 airports do not receive in-line checked baggage screening systems, they will require additional screening equipment to be placed in airport lobbies and additional TSO staffing in order to remain in compliance with the

[6]Certain information we obtained and analyzed regarding explosives detection technologies and their effectiveness in TSA's checked baggage screening operations are classified or are considered by TSA to be sensitive security information. Accordingly, the results of our review of this information have been removed from this testimony.

mandate for screening all checked baggage using explosive detection systems. In February 2006, TSA estimated that the total cost of installing and operating the optimal checked baggage screening systems at the 250 airports is approximately $22.4 billion over 20 years, of which about $6 billion is for installation, life-cycle replacement, existing committed funding, and equipment maintenance costs. However, insufficient resources have been made available to fund in-line systems on a large scale basis. TSA currently uses annual appropriations and a mandatory appropriation from the Aviation Security Capital Fund to fund the construction of in-line baggage screening systems.[7] Further, in order to leverage federal and private sector resources, TSA has supported the construction of in-line systems at 9 airports through letter of intent agreements.[8] TSA reported that as of June 2006, 24 airports had operational in-line EDS systems and an additional 25 airports had in-line systems under development.[9] In May 2006, TSA reported that under current investment levels, installation of optimal checked baggage screening systems would not be completed until approximately 2024. TSA is currently collaborating with airport operators, airlines, and other key stakeholders to identify funding and cost-sharing strategies—an effort that TSA expects to complete by early fall 2006. TSA is also focusing its research and development efforts on the next generation of EDS technology.

## Background

Prior to the passage of ATSA in November 2001, only limited screening of checked baggage for explosives occurred. When this screening took place, air carriers had operational responsibility for conducting the screening, while the Federal Aviation Administration (FAA) maintained oversight responsibility. With the passage of ATSA, TSA assumed responsibility for ensuring that all checked baggage is properly screened for explosives at airports in the United States where screening is required, and for the procurement, installation, and maintenance of explosive detection systems used to screen checked baggage for explosives. Airport operators and air

[7]Airports also rely on nonfederal sources of funding to fund in-line EDS systems.

[8]A letter of intent, though not a binding commitment of federal funding, represents an intent by TSA to provide future years funding in support of a project, contingent upon the availability of appropriated funds.

[9]The in-line systems were either airportwide (full) or at a particular terminal or terminals (partial).

carriers continued to be responsible for processing and transporting passenger checked baggage from the check-in counter to the airplane.

Explosive detection systems used to screen checked baggage include EDS and ETD machines. EDS machines, which cost between about $300,000 and $1.2 million each, use computer-aided tomography X-rays adapted from the medical field to examine the objects inside baggage to automatically recognize the characteristic signatures of threat explosives. TSA has certified, procured, and deployed EDS machines made by three manufacturers. ETD machines, which cost approximately $40,000 to $50,000 each, work by detecting vapors and residues of explosives. Because human operators collect samples by rubbing bags with swabs, which are then chemically analyzed in the ETD machines to identify any traces of explosive materials, the use of ETD is more labor-intensive and subject to more human error than the automated process of using EDS machines. ETD is used for both primary, or the initial, screening of checked baggage, and secondary screening, which resolves alarms from EDS machines that indicate the possible presence of explosives inside a bag.

As we reported in March 2005, to initially deploy EDS and ETD equipment to screen 100 percent of checked baggage for explosives, TSA implemented interim airport lobby solutions and in-line EDS baggage screening systems.[10] The interim lobby solutions involved placing stand-alone EDS and ETD machines in the nation's airports, most often in airport lobbies or baggage makeup areas where baggage is sorted for loading onto aircraft. For EDS in a stand-alone mode (not integrated with an airport's or air carrier's baggage conveyor system) and ETD, TSA TSOs are responsible for obtaining the passengers' checked baggage from either the passenger or the air carrier, lifting the bags onto and off of EDS machines or ETD tables, using TSA protocols to appropriately screen the bags, and returning the cleared bags to the air carriers to be loaded onto departing aircraft. In addition to installing stand-alone EDS and ETD machines in airport lobbies and baggage makeup areas, TSA collaborated with some airport operators and air carriers to install integrated in-line EDS baggage screening systems within their baggage conveyor systems.

In March 2005, we reported that TSA used most of its fiscal year 2002 through 2004 checked baggage screening program funding to design,

[10]GAO-05-365.

develop, and deploy interim lobby screening solutions rather than install more permanent in-line EDS baggage screening systems. We also reported that during our site visits to 22 category X, I, and II airports,[11] we observed that in most cases, TSA used stand-alone EDS machines and ETD machines as the primary method for screening checked baggage.[12] Generally, this equipment was located in airport lobbies and in baggage makeup areas. In addition, in our survey of 155 federal security directors,[13] we asked the directors to estimate, for the 263 airports included in the survey, the approximate percentage of checked baggage that was screened on or around February 29, 2004, using EDS, ETD, or other approved alternatives for screening baggage such as screening with explosives detection canines, and physical bag searches. As shown in table 1, the directors reported that for 130 large to medium-sized airports in our survey (21, 60, and 49 category X, I, and II airports, respectively), most of the checked baggage was screened using stand-alone EDS or ETD machines. On average, the percentage of checked baggage reported as screened using EDS machines at airports with partial or full in-line EDS capability ranged from 4 percent for category II airports to 11 percent for category X airports. In addition, the directors reported that ETD machines were used to screen checked baggage 93 to 99 percent of the time at category III and IV airports, respectively.

[11]TSA classifies the over 400 airports in the United States into one of five categories—X, I, II, III, and IV. Generally, category X airports have the largest number of passenger boardings and category IV airports have the smallest number.

[12]The 22 airports included 12 category X, 9 category I, and 1 category II airports. We conducted our site visits between September 2003 and March 2004.

[13]The federal security directors are the ranking TSA authorities responsible for the leadership and coordination of TSA security activities at the nation's commercial airports.

**Table 1: Average Percentage of Checked Baggage Reported as Screened Using EDS, ETD, or Other Approved Method at 263 Airports on or around February 29, 2004**

| Airport category | X | I | II | III | IV | Total |
|---|---|---|---|---|---|---|
| Number of airports | 21 | 60 | 49 | 73 | 60 | 263 |
| **Percentage of checked baggage screened using** | | | | | | |
| EDS (at airports with no in-line EDS capability) | 59 | 59 | 27 | 6 | 0 | 25 |
| EDS (at airports with partial or airportwide in-line EDS capability) | 11 | 8 | 4 | 0 | 0 | 3 |
| Totala EDS | 70 | 67 | 32 | 6 | 0 | 28 |
| ETD | 18 | 33 | 66 | 93 | 99 | 69 |
| Totala EDS and ETD | 88 | 99 | 98 | 99 | 99 | 98 |
| Other approved method | 12 | 1 | 2 | 2 | 1 | 2 |
| Totala | 100 | 100 | 100 | 100 | 100 | 100 |

Source: analysis of GAO federal security director survey data.

[a]Percentages in totals may not add to 100 percent because of rounding.

## The Deployment of Stand-alone Explosive Detection Systems Led to Operational Inefficiencies and Security Risks that In-Line Systems Could Address at Some Airports

### Stand-alone Checked Baggage Screening Systems Created Operational Inefficiencies and Security Risks

Since its inception in November 2001 through June 22, 2006, TSA has procured and installed about 1,600 EDS machines and about 7,200 ETD machines to screen checked baggage for explosives at over 400 commercial airports. For the most part, TSA deployed EDS machines at larger airports and ETD machines at smaller airports, resulting in primary screening being conducted solely with ETD machines at over 300 airports. TSA installed ETD machines instead of EDS for primary screening at these airports because of the configuration of screening stations, the costs associated with procuring EDS, and the low passenger volume at smaller

airports. Table 2 summarizes the location of EDS and ETD equipment at the nation's airports by airport category as of June 22, 2006.

**Table 2: EDS and ETD Machines Deployed at U.S. Airports as of June 22, 2006**

| | Number | | |
|---|---|---|---|
| Airport category | Airports | EDS machines | ETD machines |
| X | 27 | 1,006 | 3,384 |
| I | 55 | 468 | 1,969 |
| II | 73 | 104 | 889 |
| III | 116 | 29 | 607 |
| IV | 176 | 7 | 432 |
| Total | 447 | 1,627 | 7,336 |

Source: GAO analysis of TSA data.

Stand-alone EDS and ETD machines are both labor- and time-intensive to operate since each bag must be physically carried to an EDS or ETD machine for screening and then moved back to the baggage conveyor system prior to being loaded onto an aircraft. With an in-line EDS system, checked baggage is screened within an airport's baggage conveyor system, eliminating the need for a TSO or other personnel to physically transport the baggage from the check-in point to the EDS machine for screening and then to the airport baggage conveyor system. Further, according to TSA officials, ETD machines and stand-alone EDS machines are less efficient in the number of checked bags that can be screened per hour per machine than are EDS machines that are integrated in-line with the airport baggage conveyor systems. According to TSA estimates, the number of checked bags screened per hour can more than double when EDS machines are placed in-line versus being used in a stand-alone mode. Table 3 identifies TSA's estimates for bags screened per hour by EDS machines in stand-alone and in-line configurations and ETD machines.

**Table 3: Estimated Bags Per Hour Screened by Stand-alone and In-line EDS Machines and ETD Machines**

| | Bags per hour | |
|---|---|---|
| **Type of equipment** | **Stand-alone** | **In-line** |
| EDS machines | | |
| CTX 2500—stand-alone only | 120 | NA |
| CTX 5500 | 180 | 250 |
| CTX 9000—in-line only | NA | 500 |
| L3 6000 | 140 | 500 |
| Reveal CT-80 | 80 | NA |
| ETD machines—stand-alone only | 36 | NA |

Source: TSA.

NA: Not applicable.

## In-Line Systems Have Efficiency, Safety, and Security Benefits

TSA has reported that in-line systems create significant efficiency benefits. In January 2004, TSA, in support of its planning, budgeting, and acquisition of security screening equipment, reported to the Office of Management and Budget (OMB) that the efficiency benefits of in-line rather than stand-alone EDS were significant, particularly with regard to bags per hour screened and the number of TSOs required to operate the equipment. According to TSA officials, at that time, a typical lobby-based screening unit consisting of a stand-alone EDS machine with three ETD machines had a baggage throughput (bags screened per hour) of 376 bags per hour with a staffing requirement of 19 TSOs. In contrast, TSA estimated that approximately 425 bags per hour could be screened by an in-line EDS machine with a staffing requirement of 4.25 TSOs.

In order to achieve the higher throughput rates and reduce the number of TSOs needed to operate in-line baggage screening systems, TSA (1) uses a screening procedure known as on-screen alarm resolution and (2) networks multiple in-line EDS machines together, referred to as multiplexing, so that the computer-generated images of bags from these machines are sent to a central location where TSOs can monitor the images of suspect bags centrally from several machines using the on-

screen alarm resolution procedure.[14] A TSA official estimated that the on-screen alarm resolution procedure with in-line EDS baggage screening systems would enable TSA to reduce the number of bags requiring the more labor-intensive secondary screening using ETD machines by 40 to 60 percent. In estimating the potential savings in staffing requirements, TSA officials stated that they expect to achieve a 20 to 25 percent savings because of reductions in the number of staff needed to screen bags using ETD to resolve alarms from in-line EDS machines. According to TSA officials, as of June 22, 2006, all airports with EDS equipment use on-screen alarm resolution protocols and 16 airports had networked in-line systems.

In May 2004, TSA conducted a limited, retrospective cost-benefit analysis at the nine airports that signed letter of intent (LOI) agreements and found that significant savings and other benefits could be achieved through the installation of these systems.[15] This analysis was conducted to estimate potential future cost savings and other benefits that could be achieved from installing in-line systems instead of using stand-alone EDS systems. We reported in March 2005 that, according to TSA's analysis, in-line EDS would reduce by 78 percent the number of TSA TSOs and supervisors required to screen checked baggage at these nine airports, from 6,645 to 1,477 TSOs and supervisors. The actual number of TSOs and supervisor positions that could be eliminated would be dependent on the individual design and operating conditions at each airport. TSA estimated that in-line

[14]Under the on-screen alarm resolution procedure, when an EDS machine sets off an alarm, indicating the possibility that explosive material may be contained in the bag, TSOs examine computer-generated images of the inside of a bag to determine if suspect items identified by the EDS machines are in fact suspicious. If a TSO, by viewing these images, is able to determine that the suspect item or items identified by the EDS machine are in fact harmless, the TSO is allowed to clear the bag, and it is sent to the airline baggage makeup area for loading onto the aircraft. If the TSO is not able to determine that the bag does not contain suspicious objects, the bag is sent to a secondary screening room where the bag is further examined by a TSO. TSA also uses this on-screen alarm resolution procedure with stand-alone EDS machines.

[15]We reviewed the TSA cost model showing savings expected to be achieved with in-line rather than stand-alone EDS equipment at nine airports. We assessed the model's logic to ensure its completeness and correctness of calculations. Also, as discussed in appendix IV of our March 2005 report (GAO-05-365), we conducted a Monte Carlo simulation to: (1) illustrate sensitivity of potential cost savings of replacing stand-alone with in-line EDS systems to alternative values of key cost drivers and (2) explore the variability in the key factors used by TSA in their model. On the basis of our review of TSA's cost model, we believe that it is sufficiently reliable for the analyses we conducted and the information included in this testimony.

baggage screening systems at these airports would save the federal government about $1.3 billion[16] compared with stand-alone EDS systems and that TSA would recover its initial investment in a little over 1 year.[17] According to TSA's analysis of the nine LOI airports, in-line cost savings critically depend on how much an airport's facilities have to be modified to accommodate the in-line configuration. Savings also depend on TSA's costs to buy, install, and network the EDS machines; subsequent maintenance costs; and the number of screeners needed to operate the machines in-line instead of using stand-alone EDS systems. In its analysis, TSA also found that a key factor driving many of these costs is throughput—how many bags an in-line EDS system can screen per hour compared with the rate for a stand-alone system. TSA's analysis also provided data to estimate the cost savings resulting from installing in-line EDS checked baggage screening systems for each airport over the 7-year period. According to TSA's data, federal cost savings varied from about $50 million to over $250 million at eight of the nine airports, while at one airport, there was an estimated $90 million loss.[18]

In February 2006, TSA reported that a saving of approximately $4.7 billion could be realized over a period of 20 years by installing optimal checked baggage screening systems at the 250 airports with the highest checked baggage volumes. This savings represents the difference between TSA's compliance only strategy—which assumes minimum capital expenditures and no additional investment in in-line systems in order to comply with the mandate to screen all checked baggage using explosive detection systems—and its preferred strategy, which is based on using optimal checked baggage screening systems, including in-line EDS systems, for the 250 airports. TSA estimated that the compliance only strategy would cost

[16]This figure refers to the net present value saved over 7 years if received up front.

[17]For a basis of comparison, Office of Management and Budget Circular A-94 stipulates using a 7 percent real discount rate to compute the present value of cost savings. TSA used a 4 percent real discount rate. Following Office of Management and Budget guidance, cost savings are $1.14 billion. In addition, in TSA's analysis, the federal government does not pay for $319 million, or 25 percent, of project costs. Accounting for these costs to reflect total costs, as recommended by Circular A-94, lowers overall savings to $820 million.

[18]The relatively large costs for up-front in-line EDS at one of the nine LOI airports were not offset by the modest amount of estimated operation and maintenance cost savings; therefore, the in-line EDS system may be more costly than EDS stand-alone. By contrast, at another one of the nine LOI airports, the up-front costs of in-line EDS are lower than for stand-alone EDS, and there is a substantial amount of estimated operation and maintenance cost savings. Therefore, the in-line EDS system at this latter airport may be less costly than stand-alone EDS.

about $27 billion and the preferred strategy would cost about $22.4 billion over 20 years, creating a saving of about $4.7 billion.[19]

TSA reported that many of the initial in-line systems have produced a level of TSO labor savings insufficient to offset up-front capital costs of constructing the systems. According to TSA, the facility and baggage handling system modification costs have been higher than expected, with the nine airports with LOIs having incurred or projecting to incur up to $6 million or more in infrastructure costs for every EDS machine required. TSA stated that the keys to reducing future costs are establishing guidelines outlining best practices and a set of efficient design choices, and using newer EDS technology that best matches each optimally scaled design solution. In February 2006, TSA reported that recent improvements in the design of the in-line EDS checked baggage screening systems and the EDS screening technology now offer the opportunity for higher-performance and lower-cost screening systems.

A safety benefit of in-line EDS systems is the potential to reduce on-the job injuries. TSA reported that because procedures for using stand-alone EDS and ETD machines require TSOs to lift heavy baggage onto and off of the machines, the interim lobby screening solutions used by TSA led to significant numbers of on-the-job injuries.[20] Additionally, in responding to our survey about 263 airports, numerous federal security directors reported that on-the-job injuries related to lifting heavy baggage onto or off the EDS and ETD machines were a significant concern at the airports for which they were responsible. Specifically, these federal security directors reported that on-the-job injuries caused by lifting heavy bags onto and off of EDS machines were a significant concern at 65 airports, and were a significant concern with the use of ETD machines at 110 airports. To reduce on-the-job injuries, TSA has provided training to TSOs on proper lifting procedures. However, according to TSA officials, in-line EDS screening systems would significantly reduce the need for TSOs to

[19]These estimates are in present value terms. TSA estimated that it would cost about $1.7 billion for the optimal systems at the 250 airports, and TSA would achieve savings of about $6.2 billion in TSO staff savings. Additionally, TSA's estimate identified that equipment maintenance and EDS equipment life cycle replacement costs would be lower (about $150 million) under the preferred strategy.

[20] The Occupational Safety and Health Administration has projected based on the first two quarters of fiscal year 2006 that more than 16 percent of TSA employees will report a job related injury or illness by the end of the fiscal year, the highest percentage in the federal government.

handle baggage, thus further reducing the number of on-the-job injuries being experienced by TSA TSOs.

Use of in-line EDS systems can also provide security benefits at airports where they are installed by reducing congestion in airport lobbies and reducing the need for TSA to use alternative screening procedures at airports. During our site visits to 22 large and medium-sized airports, several TSA, airport, and airline officials expressed concern regarding the security risks caused by overcrowding due to ETD and stand-alone EDS machines located in airport lobbies.[21] The location of the equipment resulted in less space available to accommodate passenger movement and caused congestion due to passengers waiting in lines in public areas to have their checked baggage screened. TSA headquarters officials reported that large groups of people congregating in crowded airport lobbies increases security risks by creating a potential target for terrorists. TSA also reported that airports favor replacing stand-alone EDS machines with in-line systems to mitigate the negative effects of increased congestion and passenger processing times. TSA further reported that in-line systems are more secure than stand-alone EDS machines because the baggage screening is performed away from passengers who otherwise could tamper with the baggage.

Another potential security benefit of in-line EDS systems is the reduction of the need for TSA to use alternative screening procedures. In addition to screening with standard procedures using EDS and ETD, which TSA had determined to provide the most effective detection of explosives, TSA also allows alternative screening procedures to be used when volumes of baggage awaiting screening pose security vulnerabilities or when TSA officials determine that there is a security risk associated with large concentrations of passengers in an area. These alternative screening procedures include the use of EDS and ETD machines in nonstandard ways,[22] and also include three procedures that do not use EDS or ETD—screening with explosives detection canines, physical bag searches, and matching baggage to passenger manifests to confirm that the passenger

[21] We conducted our site visits between September 2003 and March 2004.

[22] The nonstandard ways that the machines are used is sensitive security information.

and his or her baggage are on the same plane.[23] TSA's use of alternative screening procedures has involved trade-offs in security effectiveness. However, the extent of the security trade-offs is not fully known because TSA has not tested the effectiveness of alternative screening procedures in an operational environment.

As part of our ongoing work on TSA's use of alternative screening procedures to screen checked baggage, we found that the superior efficiency of screening with in-line EDS compared to screening with stand-alone EDS may have been a factor in reducing the need to use alternative screening procedures at airports where in-line systems were installed. After in-line EDS systems are installed and staffing reductions are achieved, redistributing the screening positions to other airports with staffing shortages may reduce airports' need to use alternative screening procedures. In addition to deploying more efficient checked baggage screening systems, TSA is pursuing other mitigating actions to reduce the need to use alternative screening procedures. These factors include strengthening its coordination with groups such as tour operators, deploying "optimization teams" to airports that were frequently using alternative screening procedures to determine why the procedures were being used so often and to suggest remedies; and deploying additional EDS machines.

Although TSA officials have estimated that a low percentage of checked baggage is currently screened using alternative screening procedures, in February 2006 TSA reported that the use of alternative screening procedures will increase at some airports because of rising passenger traffic. TSA has projected that the number of originating domestic and international passengers will rise by about 127 million passengers over current levels by 2010. If TSA's current estimate of an average of 0.76 checked bags per passenger were to remain constant through 2010, TSA would be screening about 96 million more bags that it now screens. This could increase airports' need to rely on alternative screening procedures in the future in the absence of additional or more efficient EDS machines, including in-line EDS systems.

[23]It is TSA's policy to use standard EDS and ETD screening procedures whenever possible because of legislative requirements to do so and because TSA has concluded that these procedures provide the most effective detection of explosives at a checked baggage screening station.

## TSA Has Begun Systematically Planning for the Optimal Deployment of Checked Baggage Screening Systems, but It Continues to Face Funding Uncertainties

### TSA Has Made Progress in Planning for the Optimal Deployment of Checked Baggage Screening Systems

TSA has made progress in its efforts to systematically plan for the optimal deployment of checked baggage screening systems, but resources have not been made available to fund these systems on a large-scale basis. In March 2005, we reported that while TSA has made progress in deploying EDS and ETD machines, it had not conducted a systematic, prospective analysis of the optimal deployment of these machines to achieve long-term savings and enhanced efficiencies and security.[24] We recommended that TSA assess the feasibility, expected benefits, and cost to replace ETD machines with stand-alone EDS machines for the primary screening of checked baggage at those airports where in-line EDS systems would not be either economically justified or justified for other reasons. In February 2006, in response to our recommendation and a legislative requirement to submit a schedule for expediting the installation and use of in-line systems and replacement of ETD equipment with EDS machines, [25] TSA completed its strategic planning framework for its checked baggage screening program. This framework introduces a strategy intended to increase security through deploying in-line and stand-alone EDS to as many airports as practicable, lower life-cycle costs for the program, minimize impacts to TSA and airport/airline operations, and provide a flexible security infrastructure for accommodating growing airline traffic and potential new

[24] GAO-05-365.

[25] Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. No. 108-458, § 4019(a)-(c), 118 Stat. 3638, 3721-22.

threats. [25] The framework is an initial step in addressing the following areas:

- Optimized checked baggage screening solutions—finding the ideal mix of higher-performance and lower-cost alternative screening solutions for the 250 airports with the highest checked baggage volumes;
- Funding prioritization schedule by airport—identifying the top 25 airports that should first receive federal funding for projects related to the installation of explosive detection systems based on quantitative modeling of security, economic, and other factors;
- Deployment strategy—developing a plan for the acquisition of next-generation EDS systems, the redeployment of existing EDS assets, and investment in life-cycle extension programs;
- EDS Life-Cycle Management Plan—structuring guidelines for EDS research and development investment, procurement specifications for next-generation EDS systems, and the redeployment of existing EDS assets and investment in life-cycle extension programs that minimize the cost of ownership of the EDS systems; and
- Stakeholder collaboration plan—working with airport operators and other key stakeholders to develop airport-specific screening solutions, refine the nationwide EDS deployment strategy, and investigate alternative funding programs that may allow for innovative as well as non-federal sources of funding or financing, including formulas for sharing costs among different government entities and the private sector.

TSA said it is continuing its efforts in these areas as it works toward completing a comprehensive strategic plan for its checked baggage screening program. TSA expects to complete the strategic plan in early fall 2006.

While TSA has begun to conduct a systematic prospective analysis to determine at which airports it could achieve long-term savings and enhanced efficiencies and security by installing in-line systems or by

[25] TSA has determined that the details of its analysis of the optimal checked baggage screening solutions are sensitive security information.

making greater use of stand-alone EDS machines in lieu of ETD machines, resources have not been made available on a large-scale basis to fund these systems. In-line baggage screening systems are capital-intensive because they often require significant airport modifications, including terminal reconfigurations, new conveyor belt systems, and electrical upgrades. According to TSA, lessons learned from the first airports where in-line systems were built identified that facilities and infrastructure modifications accounted for up to 50 percent of the total cost of in-line screening systems, and modifications and upgrades to the baggage handing system typically accounted for another 25 percent of the total cost. In February 2006, TSA estimated that the total cost of installing and operating the optimal checked baggage screening systems, including in-line EDS machines, at the 250 airports is approximately $22.4 billion over 20 years, of which about $6 billion is for installation, life-cycle replacement, existing committed funding, and equipment maintenance costs.[27] According to TSA officials, the estimated costs to install in-line baggage screening systems would vary greatly from airport to airport depending on the size of the airport and the extent of airport modifications that would be required to install the system.[28] In March 2005 we reported that while we did not independently verify the estimates, officials from the Airports Council International-North America and American Association of Airport Executives estimated that project costs for in-line systems could range from about $2 million for a category III airport to $250 million for a category X airport.[29]

TSA's February 2006 strategic planning framework identified that because many of the EDS and ETD machines were deployed in 2002 and 2003 to comply with ATSA and subsequent deadlines for achieving the 100 percent

[27]Operating costs include costs related to staffing, training, and research and development.

[28]According to TSA, a fully automated in-line screening system is not appropriate for every airport, even when security and operational benefits are considered in the analysis. Therefore, for many smaller airports or at smaller terminals or airline operational areas at larger airports, the identification of other alternative in-line solutions, such as partially automated ones, will accomplish the same goal of moving checked baggage screening out of terminal lobbies. In February 2006, TSA reported that most of these solutions also offer significant TSO savings over comparable airport lobby systems.

[29]Joint Statement of David Z. Plavin, President, Airports Council International-North America (ACI-NA) and Todd Hauptli, Senior Executive Vice President, American Association of Airport Executives (AAAE) before the House Aviation Subcommittee Hearing on Passenger and Baggage Screening Problems, February 12, 2004. GAO did not independently verify cost figures provided in this testimony.

checked baggage screening mandate, a large share of the EDS machines will incur life-cycle replacement obligations during the 2013 to 2014 time period. Although TSA has not completed its efforts to develop a life-cycle cost model,[30] TSA's February 2006 strategic planning framework identified that a substantial funding requirement for EDS equipment life-cycle replacement will compete with funding requirements for new in-line systems in approximately 8 to 9 years.[31] Further, in June 2006, as discussed in the framework, TSA officials reported that if the top 25 airports do not receive in-line checked baggage screening systems, they will require additional screening equipment to be placed in airport lobbies and additional TSO staffing in order to remain in compliance with the mandate for screening all checked baggage using explosive detection systems.

## TSA Is Collaborating with Key Stakeholders to Identify Funding and Financing Strategies for Installing Optimal Baggage Screening Systems

In March 2005, we reported that TSA and airport operators were relying on several sources of funding to construct in-line checked baggage screening systems. One source of funding airport operators used was FAA's Airport Improvement Program, which traditionally funds grants to maintain safe and efficient airports. In fiscal years 2002 and 2003, 28 of the 53 airport officials we interviewed reported that their airports either had constructed or were planning to construct in-line systems relying on the Airport Improvement Program as their sole source of federal funding. With Airport Improvement Program funds no longer available after fiscal year 2003 for this purpose, airports turned to other sources of federal funding to construct in-line systems.[32] The fiscal year 2003 Consolidated Appropriations Resolution approved the use of LOIs as a vehicle to leverage federal government and industry funding to support facility modification costs for installing in-line EDS baggage screening systems.[33] Between June 2003 and February 2004, TSA issued eight LOIs to reimburse nine airports for the installation of in-line EDS baggage screening systems

[30]Life-cycle costs provide an estimate of how long the machines will be in operation and the estimated maintenance costs over this period.

[31]According to TSA, EDS machines are estimated to have a useful life of 7 years, extended to 11 years with refurbishment.

[32] The Consolidated Appropriations Act, 2004, prohibited the use of Airport Improvement Program funds for activities related to the installation of in-line explosive detection systems. See Pub. L. No. 108-199, 118 Stat. 3, 283. The Consolidated Appropriations Act, 2005, and the Department of Transportation Appropriations Act, 2006, continued this prohibition. See Pub. L. No. 108-447, 118 Stat. 2809, 3203 (2004); Pub. L. No. 109-115, 119 Stat. 2396, 2400-01 (2005).

[33]Consolidated Appropriations Resolution, 2003, Pub. L. No. 108-7, § 367, 117 Stat. 423-24.

for a total cost of $957.1 million to the federal government over 4 years. That cost represents 75 percent of the facility modification costs, with the airport funding the remaining costs.[34] TSA also uses other transaction agreements as an administrative vehicle to directly fund, with no long-term commitments, airport operators for smaller in-line airport modification projects.[35] Under these agreements, as implemented by TSA, the airport operator also provides a portion of the funding required for the modification. As of June 2006, TSA reported that about $140 million had been obligated for other transaction agreements for in-line EDS systems. To fund the procurement and installation of explosive detection systems in-line, TSA also uses annual appropriations and the $250 million mandatory appropriation of the Aviation Security Capital Fund.[36] For example, in fiscal years 2005 and 2006, TSA received appropriations of $175 million and $180 million, respectively, for the procurement of explosive detection systems and received $45 million each year for the installation of explosive detection systems. For fiscal year 2007, DHS requested $91 million for the procurement of explosive detection systems and $94 million for the installation of such systems. Of the $250 million available through the Aviation Security Capital Fund, $125 million is

[34]Under an LOI, the airport operator is responsible for providing the total funding needed to complete the project with an expectation that the federal government will reimburse the airport for a set percentage of the costs over an agreed upon period of time, contingent upon the availability of federal funds. Under all LOIs issued by TSA, the federal government bears 75 percent of the cost, while the airport operators bear 25 percent of the costs. Although the Vision 100—Century of Aviation Reauthorization Act (Vision 100), Pub. L. No. 108-176, § 605, 117 Stat. 2490, 2566-68 (2003) revised this cost share to reflect a 90 percent – 10 percent difference, subsequent appropriations acts have maintained the original 75 - 25 cost share for medium and large hub airports. See 49 U.S.C. § 44923 but see, e.g., Pub. L. No. 109-90, 119 Stat. 2070 (2005).

[35]Other transaction agreements are administrative vehicles used by TSA to directly fund airport operators for smaller airport modification projects without undertaking a long-term commitment. These transactions take many forms and are generally not required to comply with federal laws and regulations that apply to contracts, grants, or cooperative agreements; and enable the federal government and others entering into these agreements to freely negotiate provisions that are mutually agreeable.

[36]Vision 100 established the Aviation Security Capital Fund, which authorized a mandatory appropriation of $250 million for each of fiscal years 2004 through 2007 in support of airport improvement projects related to the installation of explosive detection systems. See 49 U.S.C. § 44923. In the fiscal year 2004 DHS Appropriations Act, however, Congress appropriated $250 million for the physical modification of airports to install checked baggage explosive detection systems but did so separate from the capital fund. A provision of that act precluded the use of funds to establish the capital fund in fiscal year 2004. Congress must reauthorize the capital fund for it to continue beyond fiscal year 2007.

designated as priority funding for LOIs. The remaining $125 million is to be allocated in accordance with a formula based upon the size of the airport and risks to aviation security.[37] Congress also authorized an additional appropriation of $400 million per year through fiscal year 2007 for airport security improvement projects that relate to the use of in-line EDS systems. However, appropriations have not been made under this authorization.[38]

In July 2004, as part of this subcommittee's hearing on TSA's progress in deploying in-line systems, TSA reported that there were nine in-line systems in place and an additional nine were due to be completed by 2006. In March 2005, we reported that 12 airports had operational in-line systems airportwide or at a particular terminal or terminals. As of June 2006, 24 airports had operational in-line EDS systems and an additional 25 airports had in-line systems under development. Additionally, TSA reported that it has received requests from an additional 50 airports either seeking funding to construct in-line EDS systems or reimbursement for already completed in-line systems. Table 4 provides information on the status of in-line system deployment as of February 2006.

**Table 4: Airports with In-line Explosives Detection Systems That Are Operational or Under Construction by Airport Category as of June 2006**

| | Airport category | | | | |
|---|---|---|---|---|---|
| Status of in-line EDS system | X | I | II | III | IV |
| Operational | 8 | 11 | 4 | 2 | 0 |
| Under Construction | 12 | 12 | 0 | 0 | 0 |

Source: GAO analysis of TSA data.

In a May 2006 meeting of the Aviation Security Advisory Committee, TSA reported that under current investment levels, installation of optimal checked baggage screening systems would not be completed until

[37] The pending fiscal year DHS Appropriations Act, as passed by the House of Representatives, proposes to eliminate the funding formula as applied to the Aviation Security Capital Fund and other appropriations authorized under 49 U.S.C. § 44923. See H.R. 5441, 109th Cong. (2006).

[38] These additional authorized appropriations are to follow the same 50 percent split as mandated under the Aviation Security Capital Fund. See 49 U.S.C. § 44923(i).

approximately 2024.[39] TSA further reported that unless investment is accelerated, substantial investment will be needed to replace EDS and ETD machines at the end of their life cycles and to refurbish suboptimal systems. TSA is currently collaborating with airport operators, airlines, and other key stakeholders to develop a cost-sharing study that identifies funding and cost-sharing strategies for the installation of in-line baggage screening systems. TSA plans to use the results of this study to finalize its checked baggage screening program strategic plan, which TSA expects to complete by early fall 2006.[40] In its May 2006 report to the Aviation Security Advisory Committee, TSA outlined financing options including leasing equipment, sharing savings from in-line systems with airports, and enhancing eligibility for the Passenger Facility Charge,[41] LOIs, and tax credit bonds.[42] In this meeting, TSA reported that tax credit bonds had the most potential support among stakeholders.

As TSA moves forward with planning for the deployment of checked baggage screening systems and identifying funding and financing options, it is also important for TSA to engage in planning to focus its research and development efforts. To enhance checked baggage screening, TSA is developing and testing next-generation EDS machines. According to TSA, manufacturers have only marginally improved false alarm rates and throughput capabilities of the equipment since the large-scale deployment of EDS machines in 2002 and 2003. The maximum number of bags an EDS machine can screen per hour is 500, which can be achieved only when the machines are integrated in-line with the baggage conveyor system. New EDS equipment was certified in 2005, including a smaller EDS machine

[39]The Aviation Security Advisory Committee's mission is to examine areas of civil aviation security as tasked by TSA with the aim of developing recommendations for the improvement of civil aviation security methods, equipment, and procedures. Its membership includes government officials and private sector organizations representing key constituencies affected by aviation security requirements.

[40]Section 4019(d) of the Intelligence Reform and Terrorism Prevention Act of 2004 requires the Secretary of Homeland Security to complete a cost-sharing study in collaboration with industry stakeholders to review the benefits and cost of in-line checked baggage screening systems, innovative financing approaches, formulas for cost sharing among different government entities and the private sector, and potential cost-saving approaches.

[41]The Passenger Facility Charge (PFC) Program allows the collection of PFC fees up to $4.50 for every enplaned passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition.

[42] Tax credit bonds are bonds where bondholders receive credit against their federal income tax liabilities instead of cash interest.

designed to replace ETD machines used for primary screening and an upgraded large EDS machine. In September 2005, TSA entered into a $24.8 million contract to purchase 72 smaller EDS machines to be installed at 24 airports. The President's fiscal year 2007 budget request for TSA includes funding to support research and development for in-line EDS machines that can operate at up to 900 bags per hour and employ new threat detection concepts. In its February 2006 strategic framework for checked baggage screening, TSA identified the development of high-throughput in-line EDS machines and lowering of EDS false alarm rates as key areas for improving investment management of next-generation technologies. TSA reported that these performance gains would be feasible and available in the near term. TSA also reported that given that the planning, design, and construction cycle for an in-line system can be 2 to 3 years, and these high-throughput and lower false alarm rate technologies are anticipated to be deployable by about 2008, the agency is recommending that all in-line planning and design efforts consider these new technologies.

We reported in September 2004 that the Department of Homeland Security (DHS) and TSA have made some progress in managing their transportation security research and development programs according to applicable laws and R&D best practices.[43] However, we found that their efforts were incomplete in several areas, including preparing strategic plans for R&D efforts that contain measurable objectives, preparing and using risk assessments to select and prioritize R&D projects, and coordinating with stakeholders—a condition that increases the risk that their R&D resources will not be effectively leveraged. We also found that TSA and DHS delayed several key R&D projects and lacked both estimated deployment dates for the vast majority of their R&D projects and adequate databases to effectively manage their R&D portfolios. We recommended that DHS and TSA (1) conduct some basic research in the transportation security area; (2) complete their strategic planning and risk assessment efforts; (3) develop a management information system that will provide accurate, complete, current, and readily accessible project information for monitoring and managing their R&D portfolios; and (4) develop a process with the Department of Transportation to coordinate transportation security R&D efforts and share this information with transportation stakeholders. In June 2006, DHS reported several actions that it had taken to address these recommendations, including coordinating with other federal agencies to leverage their basic research, issuing a Science and

[43]The DHS Science and Technology Directorate took over R&D from TSA in October 2005.

Technology Directorate Strategic Plan, implementing a program and project management system to monitor program and project funding and milestones, and establishing a memorandum of agreement that resulted in the formation of a Mass Transit Technology Working Group to coordinate efforts across agencies and to optimize resources. DHS also reported that basic research has been limited because the majority of R&D funds have been appropriated for countermeasures for specific threat areas. We will examine these efforts to implement our recommendations as part of our ongoing review of DHS's and TSA's airport checkpoint R&D program.

## Concluding Observations

TSA has made progress in installing EDS and ETD systems at the nation's airports—mainly as part of interim lobby screening solutions—to provide the capability to screen all checked baggage for explosives as mandated by Congress. With the objective of initially fielding this equipment largely accomplished, TSA has shifted its focus from equipping airports with interim screening solutions to systematically planning for the more optimal deployment of checked baggage screening systems.

TSA's February 2006 strategic planning framework for the checked baggage screening program is a positive step forward in systematically planning for the more optimal deployment of checked baggage screening systems. The completion of a strategic plan for checked baggage screening by early fall 2006 should help TSA more fully determine whether expected reduced staffing costs, higher baggage throughput, and increased safety and security will in fact justify the significant up-front investment required to install in-line baggage screening. TSA's retrospective analysis on nine airports installing in-line baggage screening systems with LOI funds, while limited, estimated that cost savings could be achieved through reduced staffing requirements for TSOs and increased baggage throughput. Specifically, the analysis identified that using in-line systems instead of stand-alone systems at these nine airports could save the federal government about $1.3 billion over 7 years and that TSA's initial investment would be recovered in a little over 1 year. TSA also recently estimated that a saving of approximately $4.7 billion could be realized over a period of 20 years by installing optimal checked baggage screening systems at the 250 airports with the highest checked baggage volumes. However, TSA's strategic planning framework identified that many of the initial in-line systems have produced a level of savings insufficient to offset up-front capital costs of acquiring and installing the systems. Nevertheless, TSA reported that recent improvements in the design of the systems and EDS screening technology now offer the opportunity for higher performance and lower-cost screening systems.

In-line EDS baggage screening systems have efficiency, safety, and security benefits that have been reported on extensively by Congress, GAO, TSA, and aviation industry representatives. As part of its strategic planning efforts, TSA has identified the top 25 airports that should first receive federal funding for projects related to the installation of explosive detection systems and also identified the ideal mix of higher-performance and lower-cost alternative screening solutions for the 250 airports with the highest checked baggage volumes. With this initial planning now completed, a critical question that remains is how to fund and finance these screening systems and who should pay for them. TSA is currently working with airport and air carrier stakeholders to identify funding and financing options, an effort that is due to be completed by early fall 2006.

As TSA works toward identifying funding and financing options, it will also be important for the agency to sustain its R&D efforts and further strengthen its R&D management and planning efforts. Researching and developing technologies, such as higher-throughput EDS machines with lower false alarm rates, should help TSA to improve the security and efficiency of checked baggage screening.

Mr. Chairman, this concludes my statement. I would be pleased to answer any questions that you or other members of the subcommittee have.

## Contact Information

For further information on this testimony, please contact Cathleen A. Berrick at (202) 512-3404 or berrickc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement.

In addition to the contact named above, Kevin Copping, Katherine Davis, Michele Fejfar, Thomas Lombardi, Allison Sands, and Maria Strudwick made key contributions to this testimony.

# Related GAO Products

*Aviation Security: Enhancements Made in Passenger and Checked Baggage Screening, but Challenges Remain.* GAO-06-371T. Washington, D.C.: April 4, 2006.

*Aviation Security: Progress Made to Set Up Program Using Private-Sector Airport Screeners, but More Work Remains.* GAO-06-166. Washington, D.C.: March 31, 2006.

*Aviation Security: TSA Management of Checked Baggage Screening Procedures Could Be Improved.* GAO-06-291SU. Washington, D.C.: February 28, 2006.

*Transportation Security Administration: More Clarity on the Authority of Federal Security Directors Is Needed.* GAO-05-935. Washington, D.C.: September 23, 2005.

*Aviation Security: Better Planning Needed to Optimize Deployment of Checked Baggage Screening Systems.* GAO-05-896T. Washington, D.C.: July 13, 2005.

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*Aviation Security: Challenges Exist in Stabilizing and Enhancing Passenger and Baggage Screening Operations.* GAO-04-440T. Washington, D.C.: February 12, 2004.

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*Aviation Security: Efforts to Measure Effectiveness and Address Challenges.* GAO-04-232T. Washington, D.C.: November 5, 2003.

**Statement**

**Of**

**William W. Britz**

**Project Manager, Aviation Security Systems**

**Raytheon Technical Services Company LLC**

**Before the Subcommittee on Aviation**

**House Transportation and Infrastructure Committee**

**U.S. House of Representatives**

# Airline Passenger Baggage Screening: Technology and Airport Deployment Update

**June 29, 2006**

Mr. Chairman and members of the Subcommittee, my name is Bill Britz. I am a project manager for aviation security systems with Raytheon Technical Services Company LLC, which I will refer to as "RTSC." RTSC is a wholly-owned subsidiary of Raytheon Company.

Thank you for giving me the opportunity to testify before the Subcommittee today on RTSC's role in the Reveal Pilot Project at Newark Liberty International Airport.

The Reveal Pilot Project is just one of numerous projects in which RTSC has supported the Transportation Security Administration since its creation, primarily in the areas of equipment deployment and evaluation. RTSC has successfully helped the TSA design and implement over 60 walk-through explosive trace portals, 1,500 explosive detection systems, 1,600 explosive trace detectors, and 1,700 walk-through metal detectors. I have personally been a part of much of this work over the last four years of my 30-year career at Raytheon.

RTSC is a neutral party in these efforts in the sense that we do not design or manufacture any of the transportation security equipment that you see deployed at airports around the country. Instead, we work equally with all of the equipment manufacturers to help them be more successful in protecting the traveling public.

Within the TSA, it is the Operational Integration Division within the office of Operational Process and Technology that is responsible for conducting pilot testing of certified security equipment. Pilot testing is intended to verify the suitability of

equipment for full-scale deployment, including verification of manufacturers' claimed performance specifications in an operational, rather than laboratory, setting. Pilot tests are short-term activities that typically last several months or less. Equipment may be left in place at the completion of testing so that it can continue to be put to beneficial use.

Under a contract awarded competitively by the FAA in 1999, and later transferred to the TSA, RTSC provides a broad range of engineering services to the Operational Integration Division, including project management, engineering design, site preparation, installation supervision, and test data collection and analysis. Under my leadership, RTSC performed all of these services for the Reveal Pilot Project at Newark Airport. Stakeholders in the project included the TSA, both headquarters and local staff; the Port Authority of New York and New Jersey; Continental Airlines; Reveal Imaging; and RTSC.

The goal of the pilot project was to verify the capability of integrating Reveal machines (model CT-80) with a baggage handling system in a live airport environment. Up to this point, the Reveal machines had been tested at two other pilot sites, Gulfport and JFK, but only in a stand-alone configuration.

In a stand-alone configuration, neither the input nor output side of the machine is connected to the baggage handling system, and bags are moved by hand on and off the machine.

In an integrated configuration, at least one side of the machine is connected to the baggage handling system, facilitating automated baggage movement. If only one side of the machine is connected, the configuration is termed "partially integrated," and the two possibilities are "entry integrated" for the input side and "exit integrated" for the output side. If both sides of the machine are connected, the configuration is termed "fully integrated" or "in-line." Integrated configurations are more complex and costly to build, but, if proven to work, require less labor to operate.

In the Reveal Pilot Project, a trade-off was made on the number of machines to test. Three machines were chosen because of cost and space constraints. Two machines were to be configured in the exit integrated configuration and only one in the more expensive, fully integrated configuration.

The exit integrated configuration required bags to be moved from the baggage scales at the ticket counter to the input sides of the Reveal machines. Continental Airlines ticket agents could only place one bag on the in-feed conveyor at the same time. If a machine was busy when a ticket agent brought a bag to it, the agent would place the bag next to the machine and wait. At the exit ends of the Reveal machines a conveyor was used to automatically release cleared baggage onto the Continental Airlines takeaway conveyor belt or hold all baggage that alarmed for further inspection by a Transportation Security Officer.

The fully integrated configuration added an automated storage conveyor and in-feed conveyor so that the Continental Airlines ticket agents could place several bags on the

storage conveyor at the same time, and the bags would automatically be fed into the Reveal machine when the machine was ready. The addition of the storage conveyor increased the time the ticket agent could spend helping passengers check in.

During the design phase of the pilot project, other configurations were considered, including ones proposed by Reveal Imaging and Continental Airlines. Some configurations had the Reveal in-feed conveyors placed just behind the baggage scales at the ticket counter. Ultimately, the configurations chosen for the project were those that allowed the project goal to be met at the lowest installed cost.

Let me now turn to the actual execution of the pilot testing. The Reveal machines were installed around August 2005 and were ready for use before the conveyors and control systems needed for the integrated configurations were available. When that situation became clear, the TSA decided to add a preliminary test phase to the project, in which the Reveal machines would first be tested in a stand-alone configuration.

Phase 1, with the machines installed in the stand-alone configuration, ran from 31 August to 6 October 2005, during which time 3,594 bags were scanned.

Phase 2, with the machines reinstalled in the integrated configurations, ran from 24 October through 22 November 2005, during which time 19,269 bags were scanned.

One concern that arose during the project was getting the Continental Airlines ticket agents to use the Reveal machines. Using the machines required the agents to take on the

additional responsibility of moving bags. Prior to the pilot project, passengers were responsible for taking their bags over to the large explosive detection systems located adjacent to the ticket counter.

Initially, a number of issues were seen related to bag flow and bag jams on the entrance and exit belts; however, the majority of these problems were resolved quickly and easily, and their frequency was reduced with greater operator familiarity and practice.

In summary, the Reveal Pilot Project at Newark Airport was successful in validating exit and fully integrated configurations in an operational environment, which up until this point had not been tested in any of the other Reveal pilot tests. This was a significant step forward in demonstrating the capabilities of the Reveal machine.

Mr. Chairman, I would like to thank the Subcommittee for giving me the opportunity to testify, and I would be pleased to answer any questions you and the Members may have.

**OPENING STATEMENT OF**
**THE HONORABLE RUSS CARNAHAN (MO-03)**
**COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE**
**SUBCOMMITTEE ON AVIATION**
**U.S. HOUSE OF REPRESENTATIVES**

***Hearing on***
***Airline Passenger Baggage Screening:***
***Technology and Airport Deployment Update***

**Thursday, June 29, 2006, 10:00am**
**2167 Rayburn House Office Building**

Thank you, Chairman Mica and Ranking Member Costello for holding this subcommittee hearing today.

Since September 11, 2001, security measures in America's airports have changed drastically. Airports are packed with additional machines and security officials, all put in place to ensure passenger safety, yet often crowding the already busy airport lobbies and terminals. We also need to evaluate the technology screening needs in our airports. While explosive detection machines are integral in securing our airports, they require improved equipment, further funding and increased in-line system use.

In my home state of Missouri, Lambert Airport recently completed a massive runway expansion project, but still hopes to enhance the baggage and passenger screening process.

America's airports need dependable and efficient security systems to guarantee the utmost security we depend on when traveling.

I look forward to working with my colleagues on this issue and want to thank our esteemed panel of witnesses for sharing their time and knowledge with us today.

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OPENING STATEMENT OF
THE HONORABLE JERRY F. COSTELLO
AVIATION SUBCOMMITTEE
AIRLINE PASSENGER BAGGAGE SCREENING: TECHNOLOGY AND DEPLOYMENT UPDATE
JUNE 29, 2006

- I want to thank Chairman Mica for calling today's hearing on *Airline Passenger Baggage Screening: Technology and Airport Deployment Update.*

- As aviation security has improved in the nation, to date TSA has not been successful at fully integrating explosive detection systems (EDS) in-line with airport baggage conveyor systems. As a result, lobbies are often crowded with bulky systems and TSA staffing requirements have increased. Adequate in-line systems can increase effectiveness, require fewer staff, have lower maintenance costs and have less out-of-service time.

- Additionally, failure to deploy in-line EDS may result in unacceptable security trade-offs. In March 2005, Government Accountability Office (GAO) reported that without in-line systems, several airports might not remain in compliance with the Congressional mandate to electronically screen all checked baggage.

- Going forward, clearly something will need to give - either we need to invest much more in in-line systems or we need to get rid of the arbitrary 45,000 screener cap and hire more security screeners. We must ensure that we have the screening capacity -- enough screeners and machines in the correct configurations -- to meet passenger growth and maintain the 100% checked baggage electronic screening mandate.

- The TSA and airport operators rely on commitments in letters of intent (LOIs) as their principal method for funding the modification of airport facilities to incorporate in-line baggage screening systems.

- The TSA has issued eight LOIs to cover the costs of installing systems at nine airports for a total cost to the federal government of roughly $1 billion. The GAO reports that TSA has estimated that in-line baggage screening systems at the nine airports that received LOI funding could save the federal government $1.26 billion over seven years.

- TSA further estimated that it could recover its initial investment in the in-line systems at these airports in a little over one year. Yet, the TSA has stated that it currently does not have sufficient resources in its budget to fund any additional LOIs.

- While $650 million is authorized for the installation of in-line baggage screening systems, annual appropriations have not allowed for any new LOIs to be signed. The President's budget leaves just $156.2 million for EDS installation at non-LOI airports.

- At the same time, TSA's recently released Strategic Framework for checked baggage estimates that over 200 airports will need some form of in-line EDS at a cost of between $4 billion to $6 billion. Lack of funding threatens to leave several airports without a long-term EDS solution.

- I am pleased that TSA is working on a financing plan. At a minimum, I hope that TSA's financing plan will include the reauthorization of the current Aviation Security Capital Fund that is expiring in 2007. Regardless, I strongly believe the TSA should not propose any financing initiative that involves outsourcing airport security in return for private capital. We have come too far in aviation security to go back to our pre-9/11 days when our security system was outsourced to the lowest bidder.

- Aside from consistent funding in-line EDS, research and development is critical to improving our capabilities. At the same time, we must accept that there are practical limitations to what new technologies will offer in the near future. Policymakers are always tempted to wait for better, faster, cheaper machines – especially when expectations are set by the aggressive marketing of technology companies that stand to profit.

- For example, when this Subcommittee held its last EDS-related hearing two years ago, Reveal's CT-80 was touted by some as a "silver bullet." A smaller, cheaper machine that could fit behind airline ticket counters and prevents the need for costly in-line systems. Yet at the time, Mr. Chairman, you yourself warned this Subcommittee about the CT-80's low throughput. Many experts believed that the CT-80 was suited for small and medium size airports, but not large hub airports like Newark's Liberty International.

- Mr. Chairman, as we review the implementation of the Newark Reveal pilot project, we will hear many different sides of the story. However, there are few initial points I would like to make.

- In addition to throughput issues associated with the CT-80, there may also have been physical space constraints with the location chosen by Continental. Further, there is some information suggesting that Raytheon may have exercised too much authority on the systems engineering contract it had with TSA. On this point, I believe it is critically important that federal agencies do not adopt an "outsource first and ask questions later" approach to government through vaguely scoped "systems engineering" or "systems integration" contracts. Agencies should not delegate policy decisions or project goals to their contractors.

- Again, thank you Mr. Chairman for holding this hearing. I look forward to hearing from our witnesses.

# United States House of Representatives

Committee on Transportation and Infrastructure
Subcommittee on Aviation

## Airline Passenger Baggage Screening: Technology and Airport Deployment Update

Testimony by

**Michael Ellenbogen**
Chief Executive Officer

June 29, 2006

**Reveal Imaging Technologies, Inc.**
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Mr. Chairman, on behalf of Reveal Imaging Technologies, I would like to thank you for the opportunity to appear before the Subcommittee to offer my observations on the status of airline passengers' checked baggage screening. We also understand that the Subcommittee has a particular interest in the Transportation Security Administration's (TSA) pilot program of the Reveal CT-80, which I will discuss shortly. We appreciate the Subcommittee's continuing oversight of these important issues and are happy to be able to appear before you today.

**About Reveal**

The enactment of the Aviation and Transportation Security Act (ATSA) was a defining moment in the history of aviation security and the security industry. For the first time Congress mandated 100 percent screening of all passenger checked baggage, along with other improvements to the aviation security system, such as screening of carry-on baggage for explosives. This law, which dramatically improved aviation security, created a climate whereby private funding became available for entrepreneurs with new and innovative ideas that offered solutions to the aviation security problems.

In addition to establishing the screening deadline, Congress provided clear direction by specifying that baggage screening must be performed using TSA certified Explosive Detection Systems (EDS). Based on ATSA's clear direction, Reveal accepted the challenge of developing a next-generation EDS that was based on computed tomography (CT) technology, but at the same time was 1) less expensive; 2) smaller and lighter; and 3) designed to address the real world integration issues associated with in-line screening.

It was in this environment that we started Reveal, headquartered in Bedford, Massachusetts, raising $20 million in private funds to begin our company. We knew from the outset, that to be successful, we needed to develop a successful partnership with the Transportation Security Administration. We began that

partnership in September 2003, with the initial award of a $2.4 million grant from TSA under the Phoenix Project for the development of a next-generation EDS. Ultimately, after successful completion of a number of milestones established by TSA, the amount awarded by TSA to Reveal under the Phoenix Project was increased to $6.3 million.

Over the next year, we worked to meet the rigorous standards established by TSA to gain certification. In December 2004, Reveal's CT-80 explosive detection system was certified by TSA, thus becoming only the third EDS system to receive such a certification. At less than half the size and the cost of traditional baggage screening systems, the CT-80 provides TSA and airports with the flexibility to deploy EDS in a variety of locations, including stand-alone lobby installations, behind the airline check-in desks, passenger kiosks, or at any other point in the checked baggage system.

**TSA Pilot Program**

In March 2005, TSA announced that it would acquire eight Reveal CT-80 machines to conduct operational testing and evaluation at three airports. In announcing the Reveal pilot, TSA selected Gulfport-Biloxi (Mississippi) International Airport, Newark Liberty International Airport and John F. Kennedy International Airport. Gulfport was scheduled to receive two machines, while Liberty Newark and JFK International Airports were scheduled to each receive three.

TSA stated in their press release that Gulfport-Biloxi was identified as a representative small airport in which automated checked baggage screening would replace screening performed by explosive trace detection (ETD) systems; JFK International represented an airport, with its intensive peak hour international flight operations, that could not easily integrate larger EDS systems; and Newark Liberty, with its limited lobby space, is an airport that has a continuous flow of domestic passengers throughout the year.

The TSA pilot program lasted approximately 30 days at each airport. Reveal took these pilots very seriously and made every effort to ensure that all the stakeholders were happy with the performance of the CT-80. Each pilot airport provided us with information that was invaluable in improving our EDS machines. This effort to improve our operational capabilities, both to reduce the number of false alarms and increase throughput, is a continual and on-going process for Reveal.

From Reveal's perspective, the airport pilot program was a success, as demonstrated by an order from TSA in September 2005 for 73 CT-80s.

**Next Generation EDS**

One doesn't have to spend very much time working with airports before you recognize that the security and operational needs of each airport are different. This was confirmed by our pilot program with TSA. Given this reality, we at Reveal have been working with TSA to provide airports with the baggage screening options they will ultimately require. We believe that the Reveal Next Generation Explosive Detection System is an important tool for TSA as it works to meet the congressional mandate of 100 percent baggage screening.

Reveal's EDS machines, being smaller and less expensive than traditional EDS, provide TSA and airports with flexible deployment opportunities. Whether it is integrated in-line into an airline baggage system or deployed as a stand-alone in the lobby or at a passenger kiosk, the CT-80 offers screening solutions that are attractive to airports of all types and sizes.

TSA realized the need for flexibility last year, when it issued a Request for Proposals (RFP) for Reduced-Sized EDS. Following a competitive procurement, in which Reveal was the only supplier awarded a contract for Reduced Size EDS machines, TSA began deploying Reveal CT-80 machines at airports throughout

the country. As evidenced by TSA and airport press releases, the feedback once the CT-80s are installed has been uniformly positive with simplicity of installation, ease of use, low false alarm rates, and improvement over the ETD screening process being highlighted.

As mentioned earlier, we continue to learn from each airport deployment and continue to make improvements to the Reveal EDS system – a process that will never end. However, the process for the Government to approve product improvements has been slow. Although we appreciate the need to be thorough, the approval process for modifications and improvements to our EDS systems must be accomplished as effectively and efficiently as possible in order for TSA, airports, airlines, and the traveling public to benefit from these enhancements.

**Future Challenges**

Before concluding, I would like to very briefly discuss the next challenges for TSA and the Congress – screening carry-on luggage and break-bulk air cargo for explosives. Both issues are being debated by Congress, and I am pleased to let the Committee know that TSA has asked Reveal to help meet those challenges.

With respect to passenger checkpoints, TSA selected Reveal to perform research and development work under "Project Cambria," the agency's Advanced Weapons and Explosives Detection System development program. According to TSA, Project Cambria is focused on the development, evaluation, and trial deployment of EDS for automated screening of passenger carry-on baggage at airport checkpoints. TSA awarded Reveal a $3.6 million contract late last year to develop an operational system that will enhance the carry-on baggage inspection process currently used in U.S. airports. We are working closely with TSA to fulfill that objective.

Another priority issue of concern is the need to screen air cargo carried on passenger aircraft for explosives. Last September, TSA again turned to Reveal,

awarding a $2.5 million research and development contract under TSA's EDS Break Bulk Cargo Optimization Program. Reveal's mission is to apply our dual-energy CT technology to break bulk air cargo for explosives detection, thereby optimizing detection and reducing the number of false alarms.

We fully appreciate the importance of enhancing security in these two areas and Reveal is committed to working with TSA to successfully address them.

**Conclusion**

Mr. Chairman, since our creation three years ago, Reveal has been working closely with TSA to develop products that will enhance security while meeting the operational needs of airports, airlines and passengers. While the Government process to test and approve product improvements is lengthy, we are working with TSA to try and expedite that process so enhancements can be deployed and all stakeholders, including TSA, can benefit from operational improvements. By working closely with Congress, TSA, airports, and airlines, Reveal will continue to develop products that enhance security and improve the screening experience for all Americans.

Mr. Chairman, thank you for the opportunity to appear before the Subcommittee today. I look forward to answering your questions.

**Statement of Todd Hauptli**
**Senior Vice President, Airport Legislative Alliance**
**On Behalf Of**
**The American Association of Airport Executives/Airports Council International-North America**
**House Aviation Subcommittee**
**Airline Passenger Baggage Screening: Technology and Airport Deployment Update**
**June 29, 2006**

Chairman Mica, Ranking Member Costello, I want to thank you and the subcommittee for holding this important hearing on passenger baggage screening. I am testifying today on behalf of the American Association of Airport Executives (AAAE), Airports Council International – North America (ACI-NA), and our Airport Legislative Alliance, a joint legislative advocacy organization. AAAE represents the men and women who manage primary, commercial service, reliever, and general aviation airports. ACI-NA represents local, regional and state governing bodies that own and operate commercial airports in the United States, and Canada.

The airport community is grateful for your continued interest in this topic, and we appreciate the leadership and resolve you continue to demonstrate in pursuing more efficient and effective approaches to aviation security. With an additional 300 million passengers expected to be added to our already crowded aviation system within the next decade, it is clear that the aviation security model in use today requires substantial change.

This hearing is especially timely given the situation that is emerging at a number of airports across the country this summer with air travel reaching record levels. Estimates are that nearly 210 million passengers will travel on flights from U.S. airports between Memorial Day weekend and Labor Day – nearly 10 percent more than previous highs dating back to before September 11, 2001. What travelers are finding – as many of you on the subcommittee can attest to as frequent fliers – is that the trip to the airport is quickly becoming a test of patience and endurance due in large part to the ongoing challenges TSA faces in meeting its passenger and baggage screening mandates.

Overcrowding at ticketing areas due to increased passenger volume and the presence of SUV-sized explosive detection (EDS) equipment that has been parked by TSA "temporarily" for the past three or four years in terminal buildings continues to be a problem at a number of airports. Many of those machines have been placed in airport ticketing lobbies without the kinds of integrated approaches that take maximum advantage of their certified throughputs and alarm reconciliation capabilities. The result, too often, is crowded airport lobbies (a safety and security hazard), major backups at a number of security screening checkpoints, and a huge and unnecessary increase in the number of TSA personnel necessary to operate the equipment. At many airports with ETD solutions, especially during peak times, TSA checkpoint screeners are directed to baggage screening, resulting in extremely long lines at the passenger checkpoints.

Recognizing the problems inherent in the existing, labor-intensive passenger and baggage screening model, the airport community has for several years now been very vocal in encouraging the federal government to embrace technology as a means of expediting the passenger and baggage screening process and better utilizing scarce federal resources. While there are a number of new technological tools that merit serious consideration, the greatest area of opportunity in terms of enhanced security, increased efficiency, and potential long-term TSA budget savings comes from the development of integrated baggage systems utilizing state-of-the-art EDS equipment in our nation's airports.

Before outlining the case for in-line EDS installation in more detail, I want to acknowledge and thank the subcommittee for the significant role it has played in working to secure funding for this purpose. We are particularly grateful for your efforts as part of VISION-100 to establish and authorize at $500 million annually ($250 million of which is mandatory spending) the Aviation Security Capital Fund to fund in-line projects at airports.

As you know, the VISION-100 provisions, which have produced much-needed funding that would have been otherwise difficult to obtain, expire at the end of FY 2007. It is our hope that the Congress will extend these provisions and increase the amount of funding provided for critical in-line EDS installation projects. Not surprisingly, the provisions that provide for mandatory spending for these improvements have proven to be most critical, and it is our hope that Congress will increase the amount of mandatory spending above the current $250 million level. We look forward to working with the subcommittee and other appropriate committees to secure these necessary statutory changes.

**In-Line EDS Systems: Enhanced Security, Improved Efficiency, Reduced TSA Personnel Costs**
As the 9/11 Commission and others have noted, moving EDS equipment from crowded airport lobbies and integrating them "in-line" into systems that move bags from the check-in counter to appropriate loading areas greatly enhances security by reducing congestion in key areas. Additionally, in-line systems enhance the efficiency of operations at airports and produce significant personnel savings for the federal government. A $3.5 million one-time investment in an in-line system in Lexington, Kentucky, for example, has produced more than $3 million in annual personnel savings for TSA. At John Wayne Airport in California, annual personnel savings run from $8 million to $10 million. Larger airports with in-line systems are reporting even greater annual personnel savings for the federal government.

In a March 2005 report (GAO-05-365) entitled "System Planning Needed to Optimize the Deployment of Checked Baggage Screening Systems," the Government Accountability Office found that at the nine airports where TSA has committed resources to moving EDS equipment in-line, those systems will save the federal government $1.3 billion over seven years through a dramatic reduction in personnel requirements. Specifically, it is estimated that in-line EDS systems at those nine airports will reduce by 78 percent the number of TSA baggage screeners and supervisors required to screen checked baggage from 6,645 to 1,477. The report further notes that TSA will recover its initial investment in in-line systems at those airports in just over a year.

Additionally, these systems provide other labor savings to the TSA. The in-line system at Tampa International Airport, for example, has also been shown to reduce the rate of TSA screener on-the-job injuries and their direct and indirect costs. Earlier this year, TSA testified that it would likely spend tens of millions of dollars on workers compensation claims in fiscal year 2007. By moving equipment in-line, fewer personnel would be needed resulting in fewer injuries and less time off the job, all of which would contribute to substantial savings for the agency as well as better performance.

**Despite Benefits, Federal Government Has Made Only Modest Progress Deploying In-Line Systems**
Although the merits of in-line EDS installation are clear, the federal government has made relatively little progress in deploying these systems in commercial service airports. In fact, only 20 or so commercial service airports – out of 430 – currently have operational in-line systems throughout their facilities, according to TSA. While an additional 20 or so have partial in-line systems, it is clear that much work remains to be done to move EDS equipment in-line at airports where an integrated approach makes sense. It is worth noting that the Canadian Air Transportation Security Authority (CATSA), working with airport operators, has already paid for the installation and is now operating in-line baggage screening at all major Canadian airports. We would be wise to study those successes and incorporate best practices where appropriate.

Not surprisingly, resource constraints are a key reason for the lack of progress to this point in U.S. airport facilities. Making the necessary changes at airports – reinforcing flooring, electrical upgrades, building new facilities, etc. – are difficult and expensive. Cost estimates have run in the $4 billion to $5 billion range for airports nationwide, although those figures are likely conservative given the skyrocketing price of materials and other factors. While finding billions of dollars to devote to these projects is difficult given existing budget constraints, it is clear that these upfront capital costs are modest when compared to the extraordinary expenses necessary to pay for literally thousands of extra screeners year after year using today's model. Had these investments been made after 9/11, TSA would already be realizing tens of millions of dollars in annual labor savings.

Through fiscal year 2006, Congress has appropriated $2.078 billion for EDS-related terminal modifications, although significant portions of the funds secured immediately after 9/11 were used by TSA on the short-term challenges associated with getting EDS machines in airports to attempt to meet statutory deadlines. The vast majority of the resources that were not used initially to place EDS equipment in airports have been devoted to the nine airports that participated with TSA in the Letter of Intent (LOI) process – Atlanta; Boston; Denver; Dallas/Fort Worth; Las Vegas; Los Angeles and Ontario International; Phoenix; and Seattle-Tacoma.

The LOI process, which this subcommittee was instrumental in creating and which airports have fully supported, allows interested airports to provide immediate funding for key projects with a promise that the federal government will reimburse the airport for those expenses over several years. While Vision-100 provided that the federal share of these projects should be 90 percent, the Administration has insisted that they be funded at only 75 percent. Airports have always contended that the costs of in-line projects should be met entirely by the federal government given its direct responsibility for baggage screening established in law, in light of the national security imperative for doing so and because of the economic efficiencies of the strategy.

The following lists the LOI airports and the amount of federal funding each is scheduled to receive for projects at those airports (FY 2003 though FY 2007):

**LOI Airports**

| **Airport** | **Federal Contribution** |
|---|---|
| Atlanta | $93.75 million |
| Boston Logan | $87 million |
| Dallas/Fort Worth | $104.4 million |
| Denver International | $71.25 million |
| Las Vegas McCarran | $93.75 million |
| Los Angeles/Ontario | $256.5 million |
| Phoenix | $91.5 million |
| Seattle/Tacoma | $159 million |
| **Total LOI Airports:** | **$957.15 million** |

While the LOI process has worked well at these critical airports, the Office of Management and Budget (OMB) has refused to allow TSA to issue additional LOIs to airports for in-line projects. We continue to believe this is a short-sighted view of the problem that ignores the long-term benefits that can be achieved by immediately investing to make the terminal modifications necessary to accommodate EDS equipment.

The fiscal year 2007 budget request calls for $344 million for in-line EDS installation, $187 million of which would be used to fulfill all remaining requirements for the LOI airports listed above. Under the budget request, $157 million would go to additional airports via Other Transactional Agreements (OTAs). While it is encouraging that some funding may be used in FY 2007 to reach additional airports, it is clear

that $157 million is woefully inadequate next to the billions of dollars in needs that remain at the dozens of airports where in-line systems make sense.

As the FY 2007 budget makes perfectly clear, the federal government does not yet have a long-term EDS solution in place at a significant number of airports across the country. For the past several years, the Administration has been content to put forward budgets that fulfill LOI commitments and offer little more. Unless Congress acts to extend the provisions in VISION-100 referenced earlier that provide for mandatory funding for in-line systems, it is likely that future budget requests will be even more anemic.

**Recommendations for Future Action to Expedite In-Line EDS Installation**
In our view, Mr. Chairman, the federal government's existing incremental approach to deploying in-line systems is inadequate and short-sighted. It is time to move beyond this "penny wise, pound foolish" approach and move in a new direction. Along those lines, the airport community recommends that Congress consider the following:

- **Extend and Enhance Vision-100 Provisions That Authorize and Guarantee Funding for In-line Projects.** With the key provisions mentioned earlier set to expire at the end of FY 2007, Congress should act as early as possible to extend the Aviation Security Capital Fund and ensure the continuation of mandatory spending at increased levels.

- **Pursue Creative Approaches to Address the Existing EDS Installation Funding Shortfall.** In recognition of the realities of the federal budget, Congress should pursue creative approaches to address the existing EDS installation shortfall. The LOI process worked well in encouraging individual airports to move forward with in-line projects even though those projects are clearly a federal responsibility. Although the LOI process appears to have been abandoned by the federal government, airport managers have repeatedly expressed to TSA their willingness to accommodate a wide variety of financing options to help the federal government fulfill its responsibilities in this area.

  We are encouraged by the ongoing work of TSA through its Baggage Screening Investment Study. Several leaders in the airport community including Bill DeCota of the Port Authority of New York and New Jersey; Erin O'Donnell of the City of Chicago Department of Aviation; Jim Bennett of the Metropolitan Washington Airports Authority; Steve Grossman of the Port of Oakland; Jim Koslosky of the Kent County Aeronautics Board; and Louis Miller of the Hillsborough County Aviation Authority are involved with this process as Steering Committee members. Gina Marie Lindsey, the former director of the Seattle/Tacoma airport, is also actively engaged with the study as are key representatives of U.S. air carriers.

  As we understand it, the group is tasked with identifying the universe of airports where in-line systems make sense and building a consensus around creative approaches to expediting the installation of equipment at those airports. Given the wealth of experience involved with this effort, it is our hope that the Administration and the Congress will carefully review the recommendations of this group and work diligently to implement those recommendations at the earliest possible date.

- **Make the Screening Partnership Program a Viable Option for Airports.** While there are a number of airports that are not interested in participating in the Screening Partnership Program under any circumstances, there are others that would like to see the program become a viable option. Unfortunately, the role of local airport operators in the existing program is minimal. The only real authority that an airport operator now has is to raise the issue at the beginning of the process and express an interest in having TSA use a private contractor. After that, airports have virtually no say in how screening operations will be designed. They are not allowed to decide the specific qualified screening company that will operate at their airport, and they have no role in deciding how screening

will ultimately function at their facility. Given the existing construct, it is not surprising that only a couple of smaller airports have expressed an interest in opting out beyond the original five SPP pilot airports.

In order to make the opt-out program truly viable, the law must be changed to give airports additional control over the design and implementation of plans for passenger and baggage screening at their individual facilities. Airports must be free, should they so choose, to select and contract directly with the qualified companies with which they intend to work and establish the scope of work rather than wait for TSA to make such decisions. TSA should remain responsible for establishing standards and providing regulatory oversight, but airports should be given the freedom to decide how best to get the job done. We believe that TSA is best suited for regulatory functions while airport operators and their private sector partners are best suited for operational and customer service functions.

Many of these items obviously require statutory changes. As Congress moves forward with its discussion in this area, we would encourage you to consider the following:

**Airport operators must be given the authority to select and enter into contracts directly with qualified screening companies to screen passengers and property at the airport.** Under current law, airports simply apply to participate in the program and then rely on TSA to select qualified vendors. TSA – as opposed to airports – enters into contracts with those vendors to perform passenger and baggage screening. Airports must be given a more prominent role in the process and more control in managing the contracts and performance.

**Airport operators must be given the ability to perform passenger and baggage screening directly if they so choose.** The law must make clear that airport operators should be able to qualify as a qualified screening company.

**TSA should establish a notification process under which airports submit a detailed proposal for passenger and baggage screening for approval.** Under current law, interested airports apply to participate and the process moves on from there without their involvement. Interested airports should be encouraged to work closely with qualified private sector partners and then submit that plan to TSA for approval.

**Adequate funding must be provided to ensure that airports can cover the costs associated with screening and debt service on security-related capital improvements such as in-line EDS projects.**

**The program should be expanded to allow interested airports to assume responsibility for screening cargo in addition to passengers and baggage screening.**

This is not intended to be a comprehensive and final list, but it is included for purposes of moving the discussion forward and to give the Congress an idea of some of the specific concerns that a number of airport operators have raised as impediments to participation. If some of these items were to be resolved, we believe that many airports would at minimum give the program a much closer look.

In addition to encouraging additional local involvement and new and creative approaches to screening, an expanded SPP program potentially could be utilized to move forward with the in-line installation of EDS equipment at participating airports. By providing interested airport operators with additional control and a steady and reliable funding stream – either by guaranteeing a base level of continued funding to support screening operations or by alternative means such as a formula that captures key airport characteristics such as passengers and amount of baggage screened – some

airports might be willing to move forward on their own with in-line systems. The concept here is to capture and utilize the eventual personnel savings from in-line systems to pay for the initial capital investment and debt that a participating airport would use to fund that system.

Again, even if Congress is able to make all of the changes highlighted here, there are a number of airports across the country that will not be interested in participating in the SPP. For that reason, it is imperative that TSA be encouraged to be innovative, creative, flexible, and inclusive in its approach to screening regardless of the type of employee who ultimately screens the passenger or their baggage. The keys are local flexibility, airport involvement, and tough security standards that all organizational models are compelled to meet.

Finally, we also urge TSA to continue its work with airport operators and managers to ensure that proposed solutions and changes are really the best course at an individual facility. Airport professionals understand the configuration and layout of their facilities better than anyone and are uniquely suited to highlight where pitfalls lie and where opportunities exist. In addition, TSA must continue to work with airport operators to optimize the use of limited space in airport facilities and to pay airports for the agency's use of space in accordance with the law.

Airports are pleased to see funding in the TSA budget request for ongoing maintenance of EDS machines. As the machines age and as their use continues to grow and their warranties expire, it is critical that funding is provided to keep the existing machines in operation and to restore machines that fail.

**Encouraging Development and Deployment of New EDS Technology**

In addition to investing in necessary infrastructure improvements and maintenance, the federal government needs to look toward the promise of new technology and invest in making those promises a reality. We remain convinced that there are a number of additional applications for new technology to improve baggage screening. "On-screen" resolution using EDS equipment, for example, offers great promise in enhancing the efficiency of integrated in-line baggage systems, and the utilization of technology to achieve that goal should be encouraged.

The key is for the federal government to encourage innovation in these areas and to make it a priority to investigate and approve new technology as quickly as possible. We are encouraged by the certification by TSA of smaller "next-generation" EDS equipment that can be more easily integrated into check-in areas. At many smaller airports across the country, in-line solutions will not be feasible for one reason or another, so the rapid deployment of this type of equipment holds tremendous promise as a possible replacement for personnel-intensive trace detection equipment. We commend TSA for its efforts to certify and deploy this equipment at several pilot-program airports and urge that the results of these pilots be evaluated and incorporated into future practices. We also urge TSA to move new technologies through the testing and certification process as expeditiously as possible.

**Conclusion**

Again, thank you for the opportunity to testify on this important topic. We look forward to continuing our work with the subcommittee to ensure that limited TSA resources can be leveraged to produce enhanced security and better results for America's taxpayers and the traveling public.

**United States Department of Homeland Security**
**Transportation Security Administration**

**Statement of Dr. Randy Null**
**Assistant Administrator for Operational Process and Technology**
**Transportation Security Administration**

**Before the**

**Committee on Transportation and Infrastructure**
**United States House of Representatives**
**Subcommittee on Aviation**

**June 29, 2006**

Good morning Mr. Chairman, Congressman Costello, and distinguished Members of the Subcommittee. I am pleased to have the opportunity to appear before you today on behalf of the Transportation Security Administration (TSA) to provide you with an update on our Electronic Baggage Screening Program.

As you know, TSA is responsible for screening all checked baggage carried on TSA-regulated commercial aviation flights in the United States. This requirement also includes the procurement, installation, and maintenance of the explosives detection systems necessary to screen that checked baggage. Baggage screening has been TSA's responsibility since December 2002.

Since the initial deployment of the TSA checked baggage system, TSA has pushed hard for innovation and investment intended to dramatically improve the system. Today, 51 airports are either operational or deploying some form of advanced in-line baggage screening system. Work at the nine airports covered by letters of intent is continuing. Additionally, TSA has certified two new explosives detection systems, and is testing additional systems that, if certified, will provide additional capabilities. We continue to search for answers outside the box and ways to better utilize existing technology, and we work in partnership with airports and airlines to address pressing needs, take advantage of special opportunities, and develop innovative, cost-effective solutions appropriate for unique operating circumstances. We have learned valuable lessons in the last three years about the operational nature of advanced in-line explosives screening, and we have adapted and adjusted. The systems we deploy today are significantly more efficient than the systems initially deployed, and the systems we deploy tomorrow will be even better.

**Current Technology**

TSA uses two different technologies to screen checked baggage for explosives. The first is the automated Explosives Detection System (EDS), which uses computer-aided tomography X-rays adapted from medical technology. The EDS recognizes the characteristic signatures of threat explosives, and alerts the operator to the presence of a

potential threat. Because EDS has a higher throughput than Explosives Trace Detection equipment, it is the preferred method of baggage screening. While we continue to rely on the judgment of trained operators to resolve alarms, EDS can clear the vast majority of the baggage without operator intervention. We have deployed over 1,500 EDS units, from three different manufacturers, at more than 100 airports throughout the United States.

The other technology used for checked baggage screening is explosives trace detection (ETD) equipment. ETD systems use chemical analysis to identify the potential presence of explosives. When using an ETD, samples are taken by rubbing the bag with a special swab, and that swab is then analyzed to determine if any traces of explosives are present. ETD can be used for both primary screening, as well as secondary screening to resolve alarms from an EDS unit. Currently, TSA has deployed over 6,500 ETD systems to 448 airports nationwide. Because the ETD requires that a sample be retrieved from the item to be screened, it is labor intensive. Additionally, the throughput capacity for ETD is considerably less than that of EDS, averaging 37 bags per hour per screener. TSA continually evaluates the throughput requirements at those airports using only ETD solutions to determine if operational and economic conditions may warrant substitution of ETDs with EDS technology.

*Ongoing Technological Research*

TSA continues to seek the best technology solutions to accomplish the critical task of screening checked baggage for explosives. Continued development of this technology has yielded incremental performance improvements, including lower false alarm rates, superior image quality, improved performance reliability, and improved throughput capabilities. Development of both new equipment and upgrades to existing equipment is ongoing and yielding positive results.

TSA certified two EDS products in 2005. Both of the products were results of TSA's research and development efforts under the Phoenix project, our research initiative for short term solutions deliverable within three to five years. One of these products is a new EDS unit, and the other an upgrade to existing technology. The Reveal CT-80 is the new, smaller EDS unit and the Analogic 6400 is an upgrade. These technology products provide additional options for TSA to use when assessing optimal screening solutions to meet the variety of airport needs. The Reveal CT-80, a new EDS unit, takes up approximately 30% less space than comparable EDS units currently deployed. While the throughput capacity of this unit is lower than the larger EDS units by approximately 50%, it offers an option for smaller airports reliant on ETD for primary screening. TSA is currently deploying the Reveal unit to several airports and is continually assessing all airports for baggage screening requirements that can be met by the Reveal CT-80. The Analogic 6400 is an upgrade to the L3 6000 EDS machines we have currently deployed, with improved image quality for alarm resolution, increased throughput capacity, and improved performance reliability.

Research into both short and long term solutions continues. Several vendors are developing equipment upgrades to increase the lifespan and efficiency of our current equipment. Our long term development strategy places an emphasis on developing EDS technologies that can operate at up to 900 bags per hour and employ revolutionary threat detection concepts to lower false alarm rates. We would deploy these machines where appropriate and consistent with the Electronic Baggage Screening Program Strategic Plan. Laboratory results thus far indicate that these are achievable goals.

**Funding for EDS**

TSA continues to take action on several fronts to ensure that optimal, sufficient screening solutions are provided to airports. Through eight Letters of Intent (LOIs) TSA has collaborated closely with stakeholders at nine airports to develop, design, and install advanced in-line baggage screening systems. Our funding commitments to the nine LOI airports run through the end of FY 2007 completing a federal investment of almost $1 billion for facility modifications. Furthermore, we have taken equipment deployment, redeployment, and relocation actions to increase screening capacity, reduce worker injuries, and increase screening efficiency at airports experiencing problems. Finally, when airport operators or tenants are in a position to fund a significant portion of the expense necessary to build an in-line system, either during new construction or renovation, TSA has been able to offer financial assistance through the use of Other Transactional Agreements (OTAs) for smaller projects. Under these efforts, 51 airports are either operational or deploying some type of in-line baggage screening system on a whole airport or terminal basis. In all cases, in addition to helping these airports meet screening capacity requirements, these airports have provided valuable lessons on how to develop and install advanced in-line screening.

**Strategic Planning Framework**

We have recently completed a Strategic Planning Framework for the Electronic Baggage Screening Program (EBSP) that was delivered to the Congress in February 2006 and has already begun to influence our investment and deployment decisions. This framework details TSA's long-term planning philosophy for the development and implementation of optimal baggage screening solutions at the nation's top 250 airports in terms of projected passenger growth. The goals of the plan are straightforward: to reduce total lifecycle costs associated with baggage screening by deploying optimized screening solutions customized to particular airport needs; to expand the amount of baggage that can be screened through the use of EDS technology; to develop and publish planning and design guidelines for in-line screening solutions fully reflecting lessons learned; to accelerate and leverage next generation screening technology matched to best practice designs; and to work actively with stakeholders to collaboratively manage and oversee the design of optimally-scaled screening systems.

Under this framework, TSA has prioritized airports based upon projected passenger growth and estimates of peak capacity needs. Using these peak capacity needs estimates, it is possible to make a general determination of the optimal screening solution fit for

each airport, taking into account reasonable assumptions of developments in EDS equipment. These estimates have largely been completed, although they must be continually updated to reflect current operational conditions. Use of these estimates is beginning to provide flexibility to deploy optimized solutions to airports based upon priority, with the understanding that changes in operational conditions as well as increased stakeholder participation at a particular airport will alter the priority listing. Increased stakeholder participation at a particular airport may present cost savings to the government and will require flexibility as these efforts could assist particular airports in achieving the optimal solution earlier than the priority model predicts.

Furthermore, the Strategic Plan emphasizes the refurbishment and redeployment of equipment from optimized large airports for use in implementing optimal screening systems at smaller airports. Equipment will be utilized to the fullest extent possible, with future technologies replacing existing equipment when warranted.

The Strategic Plan is also intended to address concerns over total system lifecycle costs for the baggage screening system. By systematically moving to replace screening systems with optimized systems over time, long term lifecycle costs are expected to level, instead of an anticipated spike in equipment replacement costs every five to seven years, as would take place without significant redesign efforts now.

*Investment Study*

As the costs related to the installation of advanced in-line and optimized baggage screening systems are high, a large component of the Strategic Plan is a specialized study on alternative financing solutions. This cost sharing and investment study, required by the Intelligence Reform and Terrorism Prevention Act of 2004 (P.L. 108-458), will be completed in 2006. Through this study, TSA has been working with aviation industry stakeholders to develop a cost-sharing formula and innovative financing solutions for the Electronic Baggage Screening Program. We anticipate that the initial results from the cost-share study will be available later this year.

*Aviation Security Capital Fund*

As this Subcommittee was instrumental in the creation of the Aviation Security Capital Fund as part of the Vision 100—Century of Aviation Reauthorization Act (P.L. 108-176), you should be aware that its initial authorization expires in fiscal year 2007. The Fund provides that the first $250 million collected in passenger security fees is used to fund airport security improvement projects. We support a three-year extension of the Fund through fiscal year 2010 with a proviso that the allocation requirements contained in the fund, and which are not specifically tied to aviation security needs, are eliminated.

**Conclusion**

TSA's mission is to protect the Nation's transportation systems while facilitating the movement of people and commerce. The Electronic Baggage Screening Program is a

vital piece of our aviation security network. TSA's planned investments in future technology and advanced design will help to increase security and enhance efficiency of our screening efforts.

Thank you again for the opportunity to testify today. I will be pleased to respond to questions.

**STATEMENT OF THE HONORABLE JAMES L. OBERSTAR**
**SUBCOMMITTEE ON AVIATION HEARING ON**
**AIRLINE PASSENGER BAGGAGE SCREENING: TECHNOLOGY AND DEPLOYMENT UPDATE**
**JUNE 29, 2006**

Thank you, Chairman Mica and Ranking Member Costello, for convening this hearing on *Airline Passenger Baggage Screening: Technology and Airport Deployment Update.* It has been two years since this Subcommittee held its last hearing on this topic and I welcome this update.

Since September 11th, Congress has appropriated roughly $3.9 billion for both stand-alone and in-line explosive detection systems (EDS) purchase and installation. To date, 23 airports have converted to full in-line EDS systems, and 27 airports have partially converted to in-line EDS systems. TSA has signed eight Letter of Intent (LOIs) funding agreements for in-line EDS installation at nine airports for a total federal commitment of roughly $1 billion. Airports are also self-financing these projects or using other federal funding mechanisms such as Airport Improvement Program (AIP) grants, TSA other transactional agreements (OTAs) and Passenger Facility Charges (PFCs).

Since our last hearing, the 9/11 Commission recommended that TSA expedite the installation of in-line baggage screening equipment. New research has also surfaced detailing the security, cost and operational benefits of in-line baggage

screening. In March 2005, Government Accountability Office (GAO) reported that without in-line systems, several airports might not remain in compliance with the Congressional mandate to electronically screen all checked baggage. I am glad that Ms. Cathy Berrick from GAO is here with us this morning to discuss GAO's findings. I am particularly interested in security trade-offs that may have to be made if we do not undertake these projects. With airlines expected to carry more than 1 billion passengers by 2015, something clearly has got to give - either we need to invest much more in in-line systems or we need to get rid of the arbitrary 45,000 screener cap and hire more security screeners. Either way, Congress must ensure that we have the screening capacity -- enough screeners and machines in the correct configurations -- to meet passenger growth and maintain the 100% checked baggage electronic screening mandate.

I am pleased that TSA has completed a Strategic Planning Framework ("Framework") for electronic baggage screening. We now at least have a preliminary sense of the scope and scale of the task before us. According to the Framework, approximately 200 airports still require some form of in-line system for a total cost of approximately $4 to $6 billion. TSA is working on a financing plan that we can expect at the end of this year or early next year. At a minimum, I hope that TSA's financing plan will include the reauthorization of the current Aviation Security Capital Fund that is expiring in 2007. Yet, whatever financing plans are currently being considered, I

strongly believe that aviation security is national security, and therefore the Federal government bears primary responsibility for security-related capital upgrades. I would discourage TSA from adopting any financing model that would abrogate federal control of airport screening in return for private investment. It is simply not worth outsourcing our national security to attract private capital.

It is also critically important that we continue to improve our technological capabilities through robust research and development (R&D). At the same time, we must accept that there are practical limitations to what new technologies will offer in the near future. Policymakers are always tempted to wait for better, faster, cheaper machines – especially when expectations are set by the aggressive marketing of technology companies that stand to profit.

Case in point is the Reveal CT-80 EDS machine. Reveal's CT-80 is a smaller, cheaper machine that can fit behind an airline ticket counter. When this Subcommittee held its last EDS-related hearing two years ago, many believed that the CT-80 was a sort of panacea, that it might altogether negate the need for in-line systems and their associated capital costs. Yet at the time, Mr. Chairman, you yourself warned members of this Subcommittee about the CT-80's low throughput, citing experts who cautioned, ". . .the Reveal CT-80 may only fill a niche need at 100 to 125 airports." More specifically, many experts, including our colleagues on the

Appropriations committee, believed that the CT-80 was suited for small and medium size airports, not large hub airports like Newark's Liberty International.

Mr. Chairman, as this Subcommittee proceeds this morning with its review of the Newark Reveal pilot project, we will hear many different sides of the story. However, there are few initial points I would like to make. First, in addition to throughput issues associated with the CT-80, there may also have been physical space constraints with the location chosen by Continental. Further, there is some information suggesting that Raytheon may have exercised too much authority on the systems engineering contract it had with TSA. On this point, I believe it is critically important that federal agencies do not adopt an "outsource first and ask questions later" approach to government through vaguely scoped "systems engineering" or "systems integration" contracts. Agencies should not delegate policy decisions or project goals to their contractors.

Mr. Chairman, I thank you for calling this hearing and I look forward to hearing from our witnesses.

**STATEMENT OF THOMAS RIPP, PRESIDENT, SECURITY AND DETECTION SYSTEMS DIVISION, L-3 COMMUNICATIONS, INC., BEFORE THE HOUSE SUBCOMMITTEE ON AVIATION, CONCERNING AIRLINE PASSENGER BAGGAGE SCREENING. JUNE 29, 2006**

Mr. Chairman and Members of the Committee,

I am Tom Ripp, President of L-3 Communications' Security and Detection Systems Division. I am pleased to have the opportunity to appear before you to discuss the opportunities which lie before us to strengthen security for the American traveling public. Before describing the actions we believe can and should be taken, I would like to briefly discuss the genesis of L-3 Communications, and our involvement in the security field.

**Background on L-3 and EDS**

L-3 Communications, Inc., was formed in 1997 as a spinoff of Lockheed-Martin and, through a series of strategic acquisitions and product development, has quickly become a leader in supplying products which support our nation's defense. In the civil aviation arena, L-3 produces and sells products ranging from TCAS, which is an airborne collision avoidance system, to digital flight data recorders, commonly referred to as black boxes. Our security division has been involved in aviation security since the company's inception and successfully developed the eXaminer3DX6000, an explosive detection system (EDS) based on computer tomography that was certified by the FAA in 1998. It was the first, and remains the only, EDS to give operators 3-D images of the entire checked bag contents. Since that time, we have continued to refine and upgrade our system. Detection capabilities have been enhanced without negative impact to operational throughput or false alarm rates and continued reliability improvements have resulted in

system availability of 99% for in-line systems and 98% for stand-alone systems. In addition, L-3 was the first to develop a full multiplex network capability that provides for a central screening operation, which allows for optimum utilization of the screener workforce. Today, more than 650 L-3 EDS units are found at airports throughout the U.S. with approximately 500 as stand-alone units and the remaining units deployed as in-line configurations. The L-3 system provides its greatest efficiency in the in-line configuration and was the first in the U.S. to be integrated into such a system after 9/11 at Boston's Logan International airport.

With airport traffic increasing, we believe it critical that any approach we take from this point on remain focused on increasing the probability of detection tightly coupled with increased operational efficiency and a reduced overall cost to deploy. If we continue to deploy technology without focusing on operational efficiency, the long term cost to support our nation's aviation security infrastructure will become a burden which we will not be able to afford. Also, the increasing rate of passenger traffic translates into evermore congested terminal space, longer screening lines and increased frustration levels. The traveling public expects, and deserves, an efficient process which enables a safe a secure transit to their destination. The approaches we recommend that you consider are therefore focused on the deployment of effective detection technology and the reduction of overall costs to deploy and operate. In aggregate, we are confident that, if adopted, they will generate significant cost-savings, speed up screening, increase detection capabilities, and free-up airport terminal space that will become increasingly crowded as passenger levels continue to grow.

**EDS Procurement and Refurbishment**

Explosive Detection Systems were first introduced at our nation's airports about a decade ago, and a considerable effort was made to increase the numbers following the events of 9/11. Many of these systems are beginning to age. The ability to refurbish this equipment and extend the life of current assets cost effectively for continued utilization is recommended. These systems, once redeployed, would provide for further reduction in dependencies on labor intensive Explosive Trace Detectors as well as address continued capacity growth at smaller airports. Therefore, we recommend the following actions be undertaken: First, refurbish existing EDS with software and hardware modifications to improve their detection, throughput speed, and reliability, and second, acquire additional, new certified EDS systems for in-line installations at additional airports. There are considerable benefits that can be achieved by following these recommendations.

First, the refurbishment of existing EDS can be done at approximately ½ the cost of acquiring new systems. Refurbished systems can then be redeployed, at lesser cost, to medium and smaller airports, which, while seeing increased passenger traffic, currently depend on trace detection. Trace detection systems are slower than EDS and have less detection capabilities, are labor-intensive, and therefore costly to operate. As noted by the GAO, replacing trace detection equipment with EDS units will increase security, increase passenger throughput, and reduce considerably the number of screeners required. Second, once currently deployed EDS systems are refurbished, we will be able to offer extended warranty coverage or reduced maintenance costs. Again this will reduce the TSA's overall cost to deploy . Third, it is widely acknowledged that in-line EDS configurations are far preferable to stand-alone systems at the larger airports from

perspectives of space, efficiency, and improved detection.

We believe it is critical that TSA and the Congress direct considerably more funding towards the acquisition and installation of new EDS units which, when supplemented by less costly, refurbished EDS units, can help address the considerable gap that exists in installing in-line configurations at 100 of the nation's larger airports. Experience shows that, in light of cost-savings achieved, installation of an in-line EDS system literally pays for itself in less than two years. Both the TSA and the GAO have reported that in-line baggage screening could reduce the dependence on TSA screeners by 50 to 78 percent. The sooner in-line EDS are implemented, the sooner the TSA can begin to save significant annual recurring screener related costs.

**Next Generation Systems**

The currently deployed EDS systems, when installed in the in-line configuration, are effective and efficient. Operating at rates of 600 to 650 bags per hour with greatly reduced screener headcount, these systems provide an effective security solution. They simply need to be more widely deployed. We believe they should also serve as the building block for the deployment of alternate detection technologies which, when combined with current technology, greatly enhance detection and further improve operational performance. We are recommending a system approach, deploying several technologies, evaluating the input from those technologies and then rendering a detection decision. Very simply, the decisions taken based on a whole system will be far more valuable and efficient than the sum of the parts.

For the most part, current "next generation" development programs are focused on the introduction of higher throughput machines which provide improved detection and lower false alarm rates. These new, larger machines will have a limited deployment roadmap as most of the larger airports will already have existing equipment and their cost will prohibit deployment at smaller airports.

Our recommended approach is to focus more funding on the development of alternate, orthogonal technologies, which will be far cheaper to develop and far cheaper to deploy while enabling dramatically increased detection and lower false alarms allowing for further reductions in TSA screener costs. The current platform provides the foundation for the solution and through the addition of currently available software upgrades and the addition of orthogonal technologies the solutions can be "customized" to address each unique requirement through a systems engineering approach. This approach addresses both the need for operational efficiency as well as the continued need for enhanced detection capabilities. The key is to improve overall security within the air travel network by deploying more systems now. We have the ability to cost-effectively improve the operation of existing equipment via software upgrades at far less cost than it would be to reconfigure airports to next gen systems, and we can outpace current development efforts with the inclusion of alternate technologies for dramatically improved detection.

We know the threat landscape continues to change. Deployed machines must be made more flexible to meet future challenges and the most cost-effective way to accomplish that is to include alternate detection capability within the existing technology platform.

This type of solution provides the flexibility required to address each of these needs as well as provide a path for future growth as the projections for air travel continue to increase.

**Focus on Detection and Efficiency**

The current approach to screening passengers and carry-on baggage at the nation's checkpoints is an excellent example of the problems created when operational efficiency is not a critical factor in development efforts. The current process has significant inefficiencies, is labor-intensive, and has relatively constrained detection capabilities. In addition, the present methodology of deploying individual technologies as they emerge continues to reduce the overall operational efficiency of checkpoints that oftentimes proves a source of frustration to the traveling public just as they commence their trips. By taking a systems engineering approach to the checkpoint, L-3 is creating a solution which incorporates multiple technologies for screening and detection of threats and explosives for both the passengers and their carry-on baggage. The information utilized from each of the technologies, when fused, provides a far superior detection capability that is cost effective and efficient. The advanced screening checkpoint would serve as a platform for additional sensors (including biometrics) as technologies mature. We envision that the checkpoint would combine automated carry-on baggage screening, automated trace detection, metal detection, and automated people screening that would identify concealed threats and explosives carried by a passenger. It would also improve operational efficiency by increasing throughput to an estimated 300+ passengers per hour, eliminate the need for removal of most personal items from carry-on baggage, eliminate the need for separate shoe scanning technology, provide a universally fast and

efficient screening process for all passengers, and dramatically reduce TSA checkpoint operator staffing requirements by up to 40%. This advanced checkpoint, currently in development by L-3, would screen both people and baggage and is targeted to cost little more in total than the carry-on baggage screening machines currently under development.

**Summary**

In summary, we believe that the recommendations stated herein focus on the cost-effective deployment of technology sufficient to protect our nation's air passengers. We will enhance security by the wider deployment of existing technology, and the wider deployment of enhanced alternate technologies, which more cost-effectively allow for wider deployment as they become available. Building on the currently deployed platforms will also permit the TSA to more effectively control the overall costs to screen our nation's checked baggage.

I appreciate having the opportunity to share our views with the Subcommittee and look forward to working with you to help identify ways to improve the security of the American traveling public. I would be pleased to respond to any questions you may have at this time.

**Testimony before the House Aviation Subcommittee**

John W. Wood, Jr.
President and Chief Executive Officer
Analogic Corporation

June 29, 2006

Chairman Mica, Ranking Member Costello and Members of the Committee, it is a privilege and an honor to be with you today to discuss how Analogic Corporation can and is making a significant contribution in improving our aviation security nationwide.

Allow me to give you a little background on Analogic. We are an innovative, engineering and manufacturing company based in Peabody, Massachusetts. Our revenue for 2005 was $365 million. For almost 40 years we have been immersed in the medical imaging industry primarily in the design and development of high performance digital subsystems for Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Our largest medical customers include Toshiba, GE, Siemens and Philips.

During the mid 90's we were looking for ways to leverage our medical CT technology into other applications. Explosive detection screening through computed tomography was gaining favor within the FAA and we quickly saw this as a unique opportunity to become another credible supplier to the government. Partnering with L-3, we received certification for our EXplosive Assessment Computed Tomography (EXACT™) system, which today, as many of you know, is the heart of L-3's eXaminer 3DX. Following the government's mandate to examine checked luggage, these EDS systems were installed in airports across the country.

Analogic's response to meeting that mandate by delivering hundreds of EDS systems ahead of schedule earned the Company much praise from TSA. Between 2003 – 2005, TSA awarded Analogic grants and contracts in four major programs to help finance the design and development of new generations of checked luggage and checkpoint

screening systems. No other company in the aviation security industry has such a far reaching developmental effort with TSA. We are honored by TSA's recognition and their trust in our engineering and production capabilities, and we are proud of our position and reputation as a leader in providing sophisticated security technology.

Specifically, the first competitive award under TSA's Phoenix Category 1 program was to design and develop a system upgrade to our installed base of eXaminers that would increase throughput and reduce the false-positive rate. With these two goals in mind, Analogic developed an upgrade kit that reduces false positives by 25%, increases throughput to 600 bags per hour, improves networking, and provides diagnostics and a workstation optimized for human factors. The good news is that we received certification for this upgrade over a year ago; the bad news is that TSA, to date, has not deployed a single upgrade kit. The delays in this program stem from contractual and procurement issues within TSA. Once those issues are resolved, we hope to complete our trials of the first four AN6400 Upgrade kits at John Wayne Airport this summer. We anticipate TSA ordering 62 upgrade kits by the end of the fiscal year.

The bottom line is that we have designed a major upgrade at the request of the government that reduces screener decision times through the use of a new 3D workstation, improves operational performance, and significantly lowers false alarms. The field upgrade is a cost effective method to revitalize existing fielded EDS's, is easy to install and even extends the life of key system hardware for five years – it just makes sense to roll out these out as soon as feasible and we remain frustrated by current delays. In addition, once the upgrade kits are approved by TSA, they will become the basis of our new complete checked baggage system, the AN6400. It is a dramatic advance over the AN6000, our current offering to L-3.

The second award under TSA's Phoenix Category 3 program is to design a new generation of advanced, networkable EDSs with significantly higher throughput and detection capabilities, targeted for delivery in Fiscal Year 2008. For this system we are targeting scanning speeds up to 1100 bags per hour while further reducing the false-

positive rate. We are also developing emerging technology that will reduce operational life cycle costs. Powerful systems like this will be necessary to accommodate the expected growth in passenger traffic at major international airports and as new jumbo aircraft enter service with capacities of 550+ passengers. We are calling this next-generation system our XLB for eXtra Large Bore as the tunnel opening is one meter wide. The Phoenix Category 3 Analogic XLB is a fast track program – we hope to be in field qualification this fall, receive certification in the spring of 2007 and begin deployment in early 2008.

Now, let's leave checked baggage and look at the checkpoint. For those of you in this room (and I am sure there were many) who watched the debates between President Bush and Senator John Kerry, there was an anecdotal exchange that certainly got my attention. Senator Kerry, in a one-minute monologue in which he addressed the subject of Homeland Security, asked a rhetorical question. He wondered, "If we are in fact using computed tomography to examine all checked luggage that goes into the hold of an aircraft, why aren't we doing the same thing to carry-on luggage?" I couldn't agree more.

As we witnessed in 2004 when two Chechen women were able to bring down two Russian commercial aircraft within 90 seconds of each other, there is a strong need to improve our checkpoint security systems. The screening conducted today at all our airports is based on the expensive, labor-intensive, time consuming use of individual screeners who must evaluate 2-D projection X-rays to detect guns, knives and explosives. These systems were designed over 30 years ago to prevent hijackings with handguns and hand grenades. Today's threat to the traveling public is sadly much more complex.

The checkpoint poses a number of challenges. Higher throughput and lower false alarms are critical to keeping screening lines moving quickly for passenger convenience. Checkpoint systems must detect much smaller quantities of explosives than checked luggage systems are required to do. With checked baggage, any explosive threat would be already assembled making it easier to detect. With carry-on items, much smaller

quantities of an explosive could be hidden in several items and a bomb assembled beyond the checkpoint. Moreover, there is the requirement to catch other small threats such as pocketknives and scissors which can be very difficult to identify visually in a flat, 2-D X-ray. Finally checkpoint systems must also be compact to fit into existing passenger or traffic lanes, and most importantly, they must be kept affordable.

No checkpoint development programs were in place in 2002-2003 so Analogic independently invested in the design and development of the Carry-On Baggage Real-time Assessment (COBRA™) System, which employs high-performance, compact CT technology to automatically scan a carry-on bag in one pass and generate a 3-D image of every object in that bag to resolve alarms.

Our COBRA was put through a variety of tests at the TSA Research Laboratory in 2005, and was placed in a field trial at Logan Airport in Boston, where it scanned over 37,000 pieces of carry-on luggage to evaluate the efficiency of a CT-based EDS and weapons scanner at a checkpoint.

At the end of last year, TSA established the CAMBRIA program to set the standards for - and advance the development of - checkpoint screening systems. Analogic received one of only two CAMBRIA developmental contracts and hence our third program underway is the development of this new checkpoint system, we call COBRA-A. COBRA- A provides automatic weapons and explosive detection with enhanced 3D imaging tools to streamline screener decision times. Another major benefit to passengers is the elimination of the need to remove laptops from carry-on bags. We are planning to place a number of COBRA-A demonstration units in the field later this year and we are anticipating that COBRA-A will be a centerpiece of TSA's Checkpoint of the Future.

Let me just mention one of the technical developments we are working on under this Cambria Program. It is our BRS, Bin Return System. TSA has asserted that a major savings in manpower would be gained from the automated return of those gray bins we have come to be so fond of. Analogic has engineered the technology to recirculate those

bins on their own conveyor system by rerouting them below the scanner, eliminating the need for bin return personnel and adding convenience and ease for our passengers.

Our fourth TSA technology development program, also awarded late last year under the grant program, is for small and mid-sized airports. Under the grant, we are modifying our COBRA design and architecture to offer a reduced-size EDS system for checked luggage. We call this product the King Cobra, and we see it as a natural progression from the years of work that have gone into our base COBRA and larger checked baggage system designs. With an 80 centimeter tunnel, an ability to operate in harsh environments, and a throughput of up to 300 bags per hour, we expect to go to certification of the King Cobra in the spring of next year.

Through this close partnership with the TSA, Analogic is quickly becoming the premier EDS technology provider. However, we are also a business and are adversely affected by changing DHS procurement requirements and changes in TSA's authorizations and appropriations. With three important next- generation products (Cobra, XLB and King Cobra) all going to TSL within an eight month window, we remain concerned that all these products will have difficulty getting through the final qualification and deployment process and not move forward as previously envisioned as part of the next generation deployment strategy.

This concern is all the more critical as Analogic has seen a dramatic **decrease** in the number of larger checked baggage systems procured by the government. The reasons are plain enough – many of the Category 1 and 2 airports have already received their mandated baggage systems and now a significant amount of TSA's FY07 Budget is slated for the in-line integration of those systems. Fortunately, through our L-3 partner, we have fared well overseas, but those international sales tend to be a sinusoidal wave of activity. To ensure that we as a government vendor stay in the forefront of keeping our manufacturing efficiencies and prices down, we must have nimble government agencies that adhere to the following principles:

1. Set and stay true to their developmental milestones
2. Make timely procurement decisions
3. Put enough resources in their laboratories to make certain that new products can be certified in a reasonable period of time
4. Promulgate realistic strategic deployment plans so companies can forecast with improved metrics.

Analogic is also eagerly anticipating the work TSA has been undertaking over the past year to find alternative and creative means to finance in-line EDS. We will continue to provide any assistance necessary to the agency as it continues this important work.

In closing, let me again state my appreciation in appearing before you today and bringing you up to date on Analogic's activities. Leveraging our medical imaging experience, Analogic has emerged as a major player in aviation security.

In addition to our four current programs to design and develop next-generation systems, Analogic provides 45% of the checked baggage systems in the US through L-3, which are based on our EXACT technology. Our future success is heavily dependent on our relationship with TSA and their developmental process. It is our hope that through this hearing TSA will secure the resources and support it needs to bring forth new technologies to protect our flying public from the threat of terrorism.

# Airline Passenger Baggage Screening – Technology and Airport Deployment Update

Written Testimony Of

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Before The

House Committee on Transportation and Infrastructure
Subcommittee on Aviation

June 29, 2006

Good morning, Mr. Chairman and Members of the Committee. I am Hershel Kamen, Staff Vice President for Security and Regulatory Affairs of Continental Airlines. I apologize that I am not able to be present in person to represent my 42,000 co-workers at Continental but request that this statement be included in the record. I would also be happy to answer questions either in person (at a future date) or in writing for the record.

Thank you for your invitation to testify at today's hearing. Over the last few years, Continental has been involved in a number of projects with the Transportation Security Administration (TSA) involving baggage screening systems and has worked in partnership with airport authorities and TSA to increase throughput, minimize costs, and improve customer service at a number of airports. We also participated in the Reveal pilot program to test the Reveal EDS technology (CT-80) in a live airport situation.

As you know, after the tragic events of September 11, 2001, Congress acted quickly to tighten the security of the U.S. aviation system and created the TSA to oversee and operate the screening of passengers, baggage and cargo. As aviation security moved to become a national security issue, this move was an important step in securing our skies. The Chairman and many others on this committee played an important role in making these critical moves.

In order to strengthen the security of the aviation system, Congress required that 100% of checked baggage be screened using electronic screening techniques. In general, this includes explosive detection systems and explosive trace detection units. To accommodate this requirement quickly, TSA, in a large number of airports, was forced to place the equipment in the ticket lobbies or other non-optimal locations (i.e. baggage makeup areas) of airports for use. Because of the size and the number of units necessary, many airport lobbies became very congested, with inefficient operations often created. In addition, because of the "manual" operation of both the EDS and ETD systems in a "drop and go" environment, the manpower needed by TSA (the number of Transportation Security Officers) increased. As passenger volumes return to pre-9/11 levels and continue to grow, many airports simply cannot keep up with the demand for baggage screening in the configurations in which they were placed originally.

In the last several years, Continental has successfully partnered with TSA on baggage screening projects at all of our hubs. For example, Continental, the City of Cleveland and TSA are in the midst of constructing a badly needed expansion of a baggage screening system at Cleveland Hopkins International Airport. This integrated and networked system will significantly increase throughput to accommodate passenger volume. Continental and the Houston Airport System are also in discussions with the TSA on a baggage screening project for Houston Bush Intercontinental that will help the TSA maximize the use of current manpower levels while increasing throughput to meet airport needs.

Newark Liberty International Airport (Liberty) is an infrastructure constrained airport that serves as a major domestic and international hub for Continental. Terminal C is Continental's primary terminal at the airport (although Continental has operations at all three terminals). The Terminal consists of three levels, the lower baggage claim level (where international recheck is handled), the domestic mid level and the upper international level. When TSA "installed" the detection systems into Liberty, the units were placed in the lobby of all three levels.

During 2003 and 2004 TSA at Liberty Terminal C experienced difficulties in handling the volume of bags at the terminal and shagging bags between nodes was common (even between levels). The throughput of the stand alone bags did not allow for an efficient process and the lobby based system in such an infrastructure constrained terminal caused significant crowding problems. Additionally, the customer service was terrible because passengers were forced to check in with Continental and then shag their own bags (once tagged) to one of multiple TSA screening nodes. In general the customer would wait until their bags were screened (even though the system was supposed to be drop and go), thus creating additional crowding issues and generating safety and security concerns. The system also required a high number of officers to maintain the ability of TSA to screen the bags in a timely manner, due to the manual nature of the loading and unloading process. We also understand that TSA was plagued by very high OJI problems due to the physical nature of the screening.

Continental and the Port Authority of New York and New Jersey (PANYNJ) investigated the possibility of constructing an inline baggage screening system for Liberty Terminal C, but this proved to be a very difficult task. Because of the infrastructure constraints inherent at the airport and the cost environment of the area, any theoretical proposal was either too operationally challenging to implement or too costly to be funded.

In 2004 Continental designed and in 2005 Continental began construction on a proposal that would simply integrate the units with exit and entry conveyors, add a couple of additional units at recheck to increase throughput, and enclose the units behind walls out of the public view. All would integrate the units into the check in process so that passengers would not need to be inconvenienced, but the systems would not be inline with the baggage handling system nor would they be networked in any way. The budget for this project was considerably lower than the initial inline proposals and would provide some of the benefits needed (throughput increases, staffing benefits, customer service benefits), for more efficient operations at the airport. While it was agreed that a different proposal would be needed for the long term, this project was seen as a reasonable interim term fix while newer technology and throughput enhancements could be researched. In partnership with Continental and PANYNJ, TSA agreed to fund a portion of this interim project. The international recheck level was completed mid-2005, the international check in level was

generally completed in early 2006. The domestic level is expected to be completed by Thanksgiving of 2006.

In the summer of 2004, Continental was approached by Reveal Imaging Technologies (Reveal) about a product they were testing with TSA. The product, a unit called CT-80, is a smaller version of the current Invision and L-3 CTX machines and was intended to provide the same level of electronic screening but at a much cheaper price. As the size of the unit is also much smaller than other like technologies, the belief was that the units could be accommodated into airport lobbies more easily and could even be integrated into the ticket counters for use at the time of passenger check in.

In October 2004 key representatives of Continental met with representatives of Reveal at their headquarters outside Boston. At the meeting, the new technology was reviewed and Continental was given an opportunity to see how the product worked. At that meeting, the idea of Reveal possibly being beneficial for the baggage screening issues at Liberty Terminal C was discussed.

Over the course of the next few months, Continental moved forward with the proposal to integrate the existing CTX units at Liberty while also continuing the discussions with Reveal on a potential proposal for a pilot program of their product at Liberty. While it was understood that Continental was committed to the CTX integration proposal (interim proposal) and moving forward with that project, and that Reveal had not yet been tested, approved, or piloted, the feeling was that Reveal could be a long term opportunity that was worth investigating and testing,.

During November and December 2004, Continental worked on a presentation with Reveal that would serve the purpose of being a project proposal for Continental to test the Reveal equipment at Liberty. Reveal was charged with designing the documents and Continental provided feedback to the proposal included estimated staffing savings, benefits of the proposal, and potential unit configuration. Reveal and Continental designed a number of options for unit placement at the ticket counter, at the time assuming that any potential pilot would involve five Reveal units at Liberty. In December, Continental agreed with Reveal on a final document for a Proposed EDS Pilot Program at Liberty. In the proposal, Reveal and Continental suggest that five CT-80 units would be placed on the mid level domestic check in area (far left side) in an integrated ticket counter configuration. Two unit placements were recommended to test their various pros and cons. It was estimated at the time that start up costs for the proposal would be $1.9 million including nearly $1.35 million for the cost of the units and ancillary items, and $.55 million for installation. The cost included scanning equipment, baggage system modifications, mechanical and engineering, contingencies and nearly $100,000 for the cost of ticket counter modification. Ultimately, given the change in scope of the project the ticket

counter modifications were not requested and the reduction of units from five to three reduced the cost of installation considerably.

The pilot proposal called for a single Level 2/Level 3 resolution area positioned at the end of the takeaway belt, prior to when bags continue on the outbound belt to the bag room. A diverter was to be placed on the takeaway belt to segregate all non-cleared bags.

The goal of the pilot was to show the staff savings that an integrated Reveal product could bring, test throughput assumptions of the technology, and test whether the product would work in a hub based environment (rather than stand alone in a non-hub airport).

At some time between November 2004 and January 2005, Continental was told that TSA would be considering airports for a Reveal pilot program. It was expected that three airports would be chosen for the pilot. As Continental was interested in the technology and had been working with Reveal on a pilot proposal, Continental expressed interest in being part of the pilot program.

In February 2005 Continental met with TSA to discuss the proposal for the joint Continental, PANYNJ and TSA interim project for integrating the existing CTX machines. A letter was sent to TSA requesting $10 million in funding from TSA to supplement Continental's own budget. At the meeting, Continental's interest in participating in the Reveal pilot program was also raised.

PANYNJ and Continental were ultimately awarded TSA funds to proceed with the existing CTX interim integration project. The results of this interim project are as previously described.

Over the next few weeks, Continental was informed that Liberty would be chosen for the Reveal pilot but only three CT-80 units would be available. Continental worked with Reveal on a proposal for ticket counter configuration that was less robust given the decrease in the number of units, the thought to reduce pilot program costs, and the need to limit operational disruption (including a central resolution) given the limited pilot. It was understood that the constraints put on the pilot were, in some part, necessary to accommodate the other pilots and the funds allocated for the test.

During March, April and May of 2005, Continental worked with Reveal, Raytheon, and local TSA on various configuration designs for the project (as the initial designs were either deemed not viable or acceptable). Continental expressed some concern as to the assumptions being used by Raytheon and as to the proposals for counter space. Continental was assured by Raytheon that the throughput rate of the units was in excess of 100 bags per hour (which we understand from TSA was ultimately proved inaccurate). While there was some concern over configuration and proposed layout, ultimately Continental,

Raytheon and local TSA agreed to move forward. The goal was for installation in time to meet the early summer peak period (i.e. before Memorial Day).

Because of various delays that are best addressed by TSA, Raytheon, or Reveal, Continental was informed that the pilot would be delayed until late August 2005. Continental requested that given the delay, installation be postponed until immediately after Labor Day so as not to effect operations during the end of the peak. Ultimately, because of software issues, three Reveal CT-80 units were installed in mid-September and the pilot program was run.

The Reveal units remain in the pilot location at Liberty Airport and are used sporadically. The machines have been found to be as reliable as other CTX products, but the throughput is less positive. At the end of the day, Continental cannot provide any concrete evidence that supports or negates the idea that Reveal units would be a good ticket counter solution in a hub environment due to the changes to the pilot scope and the fact that the CT-80 units were not tested in an inline configuration. Continental expects that the CT-80 units will remain at Liberty, and Continental and TSA are in discussions as to the best use of the technology to meet various needs. The CTX integration project continues and has been successful in addressing many of the issues and has proven to be a good interim solution. While the outcome of some projects and tests do not always go as originally planned, Continental has found that the TSA/industry partnership to work on screening system solutions has benefited the Parties and most importantly, the traveling public.

Mr. Chairman and Members of the Committee, again, thank you for the opportunity to address this issue. While I regret that I was not able to appear in person at this time, I would be happy to appear in the future to follow up on any questions you may have, or provide written answers to your questions for the record.

Statement of
A. Louis Parker
President and CEO, GE Security
House Transportation and Infrastructure Aviation Subcommittee

# Airline Passenger Baggage Screening: Technology and Airport Deployment

June 29, 2006

Thank you Chairman Mica, Congressman Costello and Members of the Committee for this opportunity to discuss the status and future of checked baggage screening at our nation's airports. This is our third testimony before Congress on this important issue, the second before this Committee.

I will share GE Security's perspectives on the current deployment of Explosive Detection Systems (EDS), and how technology available today needs to be more widely deployed to increase the efficiency and quality of air travel in the U.S. and abroad while significantly increasing security. Finally, I will discuss the need for leadership and vision to spur the research and development that will result in technology advances and enhancements in both security and productivity.

## Background

InVision Technologies, Inc. developed the first technology to be ultimately certified as an EDS in 1994. GE acquired InVision a decade later as a major part of GE's commitment to becoming a leading provider of security solutions. A family of GE Security explosive detection products has been developed to meet the variety of needs at different size airports. This includes five, certified checked baggage EDS products using two types of x-ray technology.

In addition to checked baggage EDS, GE trace detection portals and electronic trace detection (ETD) systems are deployed at airports and other facilities worldwide to detect explosives on people, their belongings and cargo. GE also provides cargo container security systems, access control, video security, biological detection, nuclear and radiological detection, as well as the integration of security systems, products and services to the public and the private sectors.

## Checked Baggage Screening Today

On a recent flight at Washington Dulles International Airport, the pilot made an interesting announcement. He told the passengers that they would not be able to enjoy an on-time departure because 3000 bags needed to be loaded onto waiting aircraft -- one of which was theirs. The primary reason for frequent checked baggage processing issues at Dulles is the bottleneck caused by the security screening process. Bags are loaded and unloaded manually. Poor environmental conditions in the screening areas impact machine reliability. The lack of an automated checked baggage screening systems impacts airports around the country. Dulles is just one busy airport experiencing bag screening challenges that exemplify what almost inevitably occurs without an inline EDS system.

The problem at Dulles was first brought to public attention last year in a July 5th Washington Post article. In the article, a spokesman for Lufthansa said afternoon flights to Munich and Frankfurt are often delayed as much as an hour because of the limited number of luggage screening machines:

> "Unfortunately, it's not uncommon to have a 45-minute to one hour delay. We are deeply concerned. The worst thing is we experienced a lot of this last year, and it's unfortunate we didn't get some lessons learned from last summer."

Passenger convenience is not the only consideration. Such inefficient operations are costly on many levels and to many parties, including high labor costs

associated with manual processes, expensive flight delays and mishandled baggage.

U.S. taxpayers foot the bill year after year for excessive labor-related expenses. Without an inline EDS system for screening checked baggage, TSA must pay for extra staff to operate the stand-alone EDS and ETD machines, manually load and unload the bags for screening and manually transfer bags to and from threat resolution areas.

The escalating labor cost also includes an alarming rate of injuries and related workmen's compensation claims, the highest in the federal government. We believe that automating bag handling with inline EDS systems would dramatically decrease the injuries and costs associated with manual bag handling by Transportation Security Administration (TSA) employees. After an inline EDS screening system was installed at San Francisco International Airport, the TSA reported that injury claims were down 42%, and total cost of workmen's compensation went down 77%.

The taxpayer's bill also includes personnel expenses such as recruitment and training associated with high turnover rates, estimated by the TSA to be as high as 50% for part-time screeners.

The TSA has requested funding for past due workmen's compensation obligations and new retention programs in fiscal year 2007 to address the systemic staffing-related problems. The President's Budget Request includes $10 million for a Workforce Retention Program. $20 million in back payments are required to reimburse the Department of Labor for prior worker's compensation claims filed through fiscal year 2005. $55 million is budgeted in 2007 for workmen's compensation, which is an increase of $20 million over what was included in the final 2006 budget -- a 40% increase in just one year.

The airlines bear much of the burden. SITA published a report entitled Straightforward Baggage Management in March using data from the International Airline Trade Association, U.S. Department of Transportation DOT and other high level sources. The Report provides cost estimates associated with flight delays and other irregular operations.

A. Flight Delays - The average worldwide cost for delaying an aircraft is $50 per minute. The delay cost per minute for a 747 size aircraft is $760. The average one hour delay cited by Lufthansa for an international flight would cost approximately $45,000. Exacerbating the potential impact, widebody aircraft used on most international flights have a much higher chance of incurring baggage screening related delays because of the larger and heavier nature of the baggage typically carried by passengers on international trips.

B. Baggage Mishandling – When a bag does not make its intended flight, the airline incurs costs to track and deliver it directly to the passenger at their destination. The IATA/SITA WorldTracer service estimates the average cost per delayed bag at $100.

C. Manual Bag Handling – As the Post article notes, airlines are frequently asked to move bags from one screening machine to another when there is no automated bag handling system to manage this chore. Airlines and airports have also had to hire people to deal with the logistics related to the queuing of people and bags necessary since additional security measures were implemented following 9/11 because TSA does not manage the lines of people and bags prior to actual screening. The cost varies by airport, but we have heard estimates of as much as $1 million annually for airlines to move bags between machines at Dulles based on a reported average of between $700 and $1000 per day per airline.

These are just some examples of the costs incurred by airlines without even taking into account lost business due to the associated customer dissatisfaction.

## Options for the Future of Airport Screening and Security

The future appears bleak if we continue to delay addressing the growing problem of maintaining critical security of our nation's aviation system while improving passenger and baggage screening. A means to fund efficient and effective methods of accomplishing that goal is needed now.

The Department of Transportation published the following statistics for 2005 versus 2004:

- Commercial air carrier domestic enplanements rose 6.6 percent
- International enplanements grew 12.1 percent

The growth trend continues in 2006. In April of this year, U.S. carriers had 51,704,368 enplanements - 9% growth over April of 2005.

The Federal Aviation Administration (FAA) projects average annual growth of U.S. passenger traffic at 3.1% between now and 2017 in its Aerospace Forecast Fiscal Years 2006-2017 Report. This may be conservative if economic pressures from sources such as escalating oil prices and the war in Iraq decrease. Even using their numbers, the 739 million enplanements in 2005 grow to 1 billion by 2015. At the industry average of 1.5 bags per enplaned passenger, the number of bags to be screened will climb from 1.1 to 1.5 billion. At this rate of growth, the system will be completely overwhelmed long before 2015 arrives.

A much better vision for the future of checked baggage screening and security for the transportation industry in general is possible with commitment to the goal of achieving a better and more secure tomorrow through advanced technology development and infrastructure investment.

There is little or no space for additional people or machines in airport lobbies. Automated, advanced technologies utilizing a combination of multiple sensors, called "sensor fusion", as the primary means of achieving higher levels of security with less real estate and cost, is the answer.

How we implement EDS for checked baggage in U.S. aviation, will predict much about the future of all aviation and transportation security. The lesson and message evident today to those who may be willing and able to create innovative solutions is that interest and support wanes quickly after a security event occurs and media attention disappears.

Both in the future, and today, effective security is layered by design with interdependent, interconnected components. That interdependence was evident in an insightful comment made by the head of the Washington Task Force at a recent Chamber of Commerce Registered Traveler Symposium. He said that improving the checkpoint experience alone would not provide the predictable check-in time we seek for travelers. As processing efficiency and screening rates improve at passenger checkpoints, the time required to arrive in advance of a flight may still vary depending on checked baggage processing. Therefore, an automated, inline EDS checked baggage screening system has to be part of a comprehensive airport security solution.

## Technology Development

Technology has progressed significantly in recent years and is poised to make great advances with proper support in the near future.

Since GE last testified before this committee in July of 2004, we have made a number of advancements in checked baggage screening technology. A number of software enhancements have been deployed which have markedly improved operational performance of the current generation of EDS machines.

We released the new CTX9400 that will enter into the operational testing phase upon completion of final TSA certification testing. The expected benefits include a 25% relative reduction in False Positives, a 50% reduction in Shield Alarms (the hardest and most expensive alarms to resolve as they must be handled through manual threat resolution in the bag inspection room) and improved EDS reliability. These improvements will result in lower operational cost and better overall processing throughput. The CTX9400 is available both as a new model and as an upgrade to existing equipment. It is not necessary to replace existing EDS to obtain these improvements – a critical consideration in a resource-constrained environment.

GE certified the Yxlon 3000 x-ray diffraction EDS in the U.S. This is the first actual next generation technology since it is not based on one previously certified and used historically for detection of explosives. The next phase of diffraction development is certification of the XRD. The XRD is a combination of a CTX 9000 series and Yxlon 3500 in a system-of-systems that is currently being certified in Israel and has undergone preliminary TSA certification tests. It is the first step in producing a fully automated system that replaces a labor-intensive threat resolution process with an automated one using diffraction-based technology. It is also an example of sensor fusion as both the CT and diffraction detection technologies work together.

GE developed ViewLink, which is a productivity and security enhancing upgrade to the smaller CTX2500 and CTX5500 EDS equipment. It networks the machines in a similar fashion as done with larger inline EDS systems but with a much simpler, and cheaper installation. It provides a reduction in headcount as well as a more effective threat resolution process since the operators know exactly where to search for suspect items. The bottom line benefit from ViewLink is increased security at a lower cost to taxpayers.

For the future, our technology roadmap lays out a continuous improvement plan for EDS technology. Each step in the plan is upgradeable to ensure that investments in this critical technology are not wasted.

We expect to release the CTX9800 in 2008. The CTX9800 substantially increases throughput with full volumetric, high-resolution 3D imaging and inspection. The alarm rate will also be lowered and reliability further improved. This product is also capable of sensor fusion by adding other detection technologies such as with diffraction on the XRD.

Broader leaps in EDS technology are being developed through the longer range Manhattan II Program run by the Department of Homeland Security's Science & Technology Directorate. GE also participates in this important R&D effort.

Along with the core product development, GE continues to upgrade its EDS networking systems to make them economically scaleable and fail-safe.

These future improvements will drive down cost while improving security and operational efficiency. Manufacturers typically fund at least two-thirds of research and development costs for technology. Without a commitment on the part of the federal government to protect the U.S. aviation and other transportation modes through technology development and implementation, there will be little incentive for manufacturers to continue to make such technology investments.

To fully realize the benefits of such innovations and to spur research in advanced security technology solutions, there must be a clearly articulated plan and a path from research to development to deployment. Technologies developed for aviation are not only portable to other transportation industries, but can be used to mitigate threats in other areas such as our borders, ports, government buildings, nuclear facilities, chemical plants, and iconic structures.

## Summary

The future of checked baggage screening and other security technology depends on a willingness to invest now in a development path that leads to a highly effective, non-intrusive, networked system of sensors that is economically feasible. That future is in serious jeopardy due to a lack of support and the will to invest when there is no immediate criminal or terrorist event to focus attention and spur allocation of precious resources.

As air traffic grows, the throbbing headache we feel today will become a migraine. The pain will even be felt at smaller airports due to the hub and spoke transportation system structure. Eventually, another terrorist event or the crushing weight of an inefficient system will force action. Under those conditions, it is less likely to be one we all desire.

The options are to live with deploying whatever we have when the next event occurs, or to steadily work towards improving today's situation and tomorrow's future because we live in a world where the security threat is unlikely to diminish. A bleaker possibility is that the national capability to produce the necessary detection technology will have been temporarily lost, causing a delay in our ability to respond effectively at all.

We have experienced first-hand the devastating effects that inadequate security can bring. We recognize that increasing the effectiveness of security operations must be done in a cost-effective manner given the limited resources available – and GE is willing to work with the U.S. government and all stakeholders to increase security through effective and cost-saving technology.



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